SUC-SESSION

- News
  - ZX Touch - The Handheld Spectrum
  - Alternative video output for the ZX Spectrum
  - »Wild pixels: The Apple-1«
  - Late love for the Sinclair QL
  - Chip8 emulator for ZX Spectrum 48k
  - The "Last Ninja" story
  - And much more ...

ISSUE

236.

OF YOUR MAGAZINE

YOUR MAGAZIN FOR THE SINCLAIR ZX SPECTRUM

EDITORIAL

Dear readers of SUC session,

First of all, I'd like to thank you for the get-well wishes that have reached me. I am well again in the sense that I can use all of my 10 fingers to write again - at least some of them, considering that I tend to use a multi-finger system for writing. It was difficult to make my small contribution to the magazine with only one hand, my left, and a pencil taped to the plaster cast on my right hand.

Once again, Thomas and I received a surprising number of articles. I was actually rather skeptical as to whether we would even manage 20 pages. It turned out to be more, and for that we, Thomas and I, would like to thank the contributors.

The year 2023 is coming to an end. Although most of the pandemic is over, others around the world are now going crazy. It seems to be fashionable to settle differences of opinion in the form of war. I'm thinking of Hamas, whose attack on Israel has brought much suffering to the Palestinians. The unfortunate war in Ukraine is still not over, the autocrat in Russia still hasn't got the message. Sometimes I wonder where all this is leading. I'm reminded once again of the quote from cartoonist Ralph Rute, who has one of his characters say: "And here's the news: Everyone's gone mad..." I can agree with that.

We have once again put a lot of effort into the magazine. There are lots of interesting articles in it again. In fact, this time there are relatively many articles, namely three, in the magazine that do not deal with the Spectrum. Christof Odenthal surprised me with his description of the image structure in Apple 1, as did Roger Boesch's dive into the depths of the Sinclair QL. In comparison, my description of the Dragon 32 is almost brief.

Regarding the »Club Magazine« project: There are still some magazines missing. I have all the magazines, those of the *Spectrum Userclub Wuppertal* and our *SUC session*. All magazines that are still missing are marked in red. So have another look in the cellar and in the fridge to see if you can still find something.

Be that as it may, we are looking forward to Christmas with the family. In any case, I'm looking forward to it and hope you feel the same way

Best wishes, a Merry Christmas and a Happy New Year!

Joachim and Thomas

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IMPRINT

The **SUC-Session magazine** appears in German and English and can be subscribed at the **»Spectrum-User-Club«**. For further information please contact **Thomas Eberle**.

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Cover image by *»ZX Art«*

The rights of the articles as well as the pictures and graphics are owned by the individual authors and photographers.

We thank all helpers for their contributions.

Copy deadline for SUC SESSION 237

Sunday, 03. March 2024

HOW TO SUBSCRIBE TO THE SUC SESSION

In general, the magazine is the main service of the SPECTRUM-USER-CLUB. The magazine is made by Spectrum users and for Spectrum users. Everyone can participate. By participating you can earn the magazine.

The magazine is offered in subscriptions â three issues. Usually three issues are published per year.

Subscription 1:
Three issues as a printed version
Prices:
Germany: 22.00 €
EU-wide: 26.00 €
Worldwide: 29,00 €

Subscription 2:
Three issues as PDF
Price worldwide: 4,50 €

We are planning an exclusive access to reader-only content, software and older (backup) PDF issues of the SUC Session for download. Until the website for this is up and running, this content will be sent by email on request.

The club has the following bank details,

(only use this data, not the data of the Sintech company!):

IBAN: DE93630500000719102,
BIC: SOLADES1ULM,
account holder: Mirko Seidel

PAYPAL payment is also possible:
https://www.paypal.me/Micro256

or via our website
www.speccy-scene.de

Of course you can also use other payment methods like money by registered mail, cheque or other. It would also be important to send us an e-mail or call us for the address details.

Instead of paying in Euros, you can also pay in SUC points, 1 point is worth 1 Euro. There are the following points:

1) Submit article 2 points, activated on Publication
2) Translate article German-English or English-German 1 point
3) Enquiries and small letters to the editor do not get any points for the time being, but whoever sends a letter to the editor that can be used as a real article, will of course also get one point for it.

If you are interested in helping out, please contact us. We distribute translation work and try to keep things in order so that two authors do not work on the same topic.

If you already have a subscription, we will contact you when it expires. In this case please respond immediately so that we can plan the quantities for the next issue in good time.

READERS LETTERS

Thank you again for your letters to us.

It's always nice to hear from our readers.

This time we start with *Paul Young* from Weybridge (UK):

Hello readers,

My latest project was to get my toastrack (128k Spectrum) working with my modern HP Envy wireless printer. I had just started with an old Epson Stylus 880 inkjet printer and a multiprint Centronics interface when the printer's electronics were beyond repair. In a way this was good news as I now had the excuse I needed to justify buying the RetroPrinter Centronics to WiFi printer converter from RWAP that I had been interested in for some time.

I've now set it up with Tasword 3 and all the character styles work as well as the often elusive £ character.

Next I'm going to try out some other printing applications. It really is incredible to see how it works. My intention is to submit an article about my experience for SUCSESSION readers and eventually create a YouTube video too. Hopefully it will be of interest?

Best wishes to you all

Paul (Young)

Hello Paul,

the topic with your printer is actually worth an article. Applications like this are always very popular with our readers. We'd love to hear more from you and I hope you make your software changes available to everyone.

Greetings, Thomas

Let's continue with an email from *Christof* from Rudelzhausen in Bavaria:

Hello Thomas,

is everything ok with Joachim? I wrote to him a few days ago and haven't received an answer yet. Maybe he's busy with the magazine.

How have you dealt with pictures in the magazine so far? Because of the rights, did you always search for the artists and ask them? The SUCSession is a club magazine and therefore not directly public...

I have a few pictures of demos in my current article. One of the artists is already dead and I haven't contacted the other one yet.

Because of a new demo I got the "Z88DK "CCompiler for the Speccy to work. With this you can program something with less effort and also reuse code more easily. Maybe we can do something with it?

Best regards,

Christof

Hello Christof,

Joachim's hand wasn't feeling too well at the time you were writing. That may be the reason for the delay.

In general, we often work in blocks here, i.e. everything that concerns the club is first put in the same drawer and then processed all at once. This way we save time because, as you can imagine, club work is sometimes time-consuming.

We also thought about the pictures, which is why Joachim always uses his own pictures or pictures for which he has permission for the front pages. However, when we do game reviews, we don't obtain image rights, if a product is offered as free software, you have to be able to report on it. I think there was even a ruling on this. Commercial providers, on the other hand, shouldn't have anything against free advertising and they don't. We are well networked in the Spectrum world and naturally have a good relationship with everyone, so there won't be any problems.

Demos in C... I always assumed you needed assembler. But the topic sounds interesting. Perhaps you can also report on how you have optimally embedded the "Z88DK" compiler in a programming environment?

Greetings, Thomas

Hello Christof,

I would like to make a brief comment about the images. I am currently using the images that can be found on the "ZXArt" website. These pictures are provided by the artists. The origin is indicated in the imprint. It is always quite an effort to rework my own photos so that they correspond to the RetroComputerStyle. So far, issue 232 is the last issue of which the cover is a modified picture by me. All subsequent issues are from ZXArt. When I use photos from the Internet, they are generally license-free images.

However, it always makes sense to ask for permission to use images. In general, however, the artists have nothing against it.

Greetings, Joachim

***Harald Lack* from Raubling has also written to us again. We are very happy that he regularly provides us with articles:**

Hello Thomas,

First of all, the good news - thank you very much for the new and once again very interesting club magazine. I would also like to thank all of the collaborators, because without their commitment, nothing would happen. Unfortunately, Joachim has been out of action for some time due to various external influences. I would like to take this opportunity to send Joachim my best wishes for a speedy recovery, even though we have been in constant contact in the recent past as far as he has been able.

Without knowing our demographic factor in the club, I can assume that our members are older rather than younger. This means that will be dropouts, which is completely normal and should not be seen as negative. I've been around for quite a while and can therefore understand Thomas when he reminds us that he and Joachim can't do everything on their own. That's understandable and completely legitimate. I would like to take this opportunity to thank you for your commitment so far. Personally, I always try to deliver something. I have to say that it's not easy, because one has to do it all in ones free time. Please don't get me wrong, I'm happy to do it, but my day only has 24 hours and even if you don't want to believe it, there's still a life besides the Spectrum. Given the right ideas, I believe that everyone really has something to say/write. You just have to pull yourself together. Even older topics can be interesting to look at again from a new perspective - technology is always advancing. So we should take a good look at ourselves and give Thomas/Joachim our best support. After all, as Thomas rightly points out, we are doing it for ourselves. To us it should be worth it. After more than 40 years of Spectrum, it shouldn't be over yet.

With this in mind, let's get to work on the keyboards.

Harald

So, me again…

Many thanks for your get-well wishes! I can use my hand again to some extent, even if the operation didn't have the desired effect. I had imagined things differently.

Many thanks for your kind words for Thomas and me. It's a lot of work to put the magazine together every time, and despite the fact that we were actually planning to take a step back from the editorial work, Thomas has gone over the top again! I sometimes wonder where he finds the time.

As far as your contributions are concerned, you can actually sit back and put your feet up. I currently have more articles and game solutions than I can fit into the magazine. Thank you very much for that. And for those who are interested: Harald has already contributed to the magazines that were published by the Spectrum Userclub Wuppertal. I always found his contributions when revising the magazines. Thank you! Harald!

Greetings, Joachim

Thank you, Harald, for this appeal. I can only agree with it and you, Harald, are setting a good example. Keep up the good work!

Greetings, Thomas

This time the sign off is from Francesco Borella from Vigonza, Italy:

Hello Thomas,

Thank you for your email and good health and recovery to Joachim. I would also like to come to CRASH LIVE 2023, but I think it will be difficult.

All the best, Ciao, Francesco

Thank you for your words, Francesco. Joachim is back to normal and I'm almost on my way to England as I write these lines. Whether we will see each other at CRASH LIVE or not, I will report in the next issue.

Ciao, Thomas

Hello Francesco,

Many thanks for your wishes. I can write again, even if it's not fully back to normal.

Greetings, Joachim

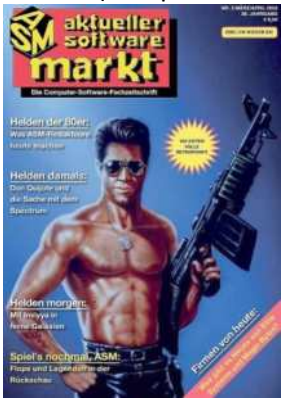
As always, please send letters and questions to Thomas Eberle.

thomas.eberle@sintechshop.de

NEWS IN SHORT

ASM IS BACK

Hardly any German computer fan of the 80s is unfamiliar with this magazine: ASM - Aktueller Software Markt. Modeled on the British CVG (Computer and Video Games), this magazine was published from 1986 to 1995 and, in keeping with this example, provided an overview of the entire market, including Spectrum releases. During this time, it was almost the only magazine in Germany to mention the Spectrum at all. And now the magazine is back, although with just one issue. Nevertheless, it's a cult magazine that features many of the people who were involved back then, as well as an overview of the current retro scene. If you want to bring back a piece of 80s computer culture, the best place to order is Amigashop.org:



https://www.amigashop.org/product_info.php?cPath=49&products_id=382

SPECTRUM NEXT SENT OUT

The 2nd. Production of the Spectrum NEXT is now complete and is being sent to the backers (i.e. the pre-orderers). At the moment, there are no plans for further devices to go on sale, i.e. the only way to get hold of the

devices is via so-called "crowdfunding". Will there be another production run? It's possible, but it's not certain.

LOAD VISIT

Unfortunately, the joint visit to the Spectrum Museum in Portugal last year did not work out. A travel report on this museum has now been published (in German) and we are linking to the report here in order to perhaps arouse interest in making this trip a club trip after all:

https://digitalesleben.blog/2023/11/03/besuch-im-load-zx-spectrum-museum-in-cantanhede/

QUAKE ENGINE ON THE SPECTRUM

There is no end to the number of people trying things on the Spectrum that are apparently impossible. A demo of Quake has now been released, on which this 3D first-person shooter seems possible, and at an acceptable speed. Demo and files are available, the links in the following article:

https://hackaday.com/2023/09/12/zx-spectrum-gets-a-3d-fps-engine/

ON THE ZX SPECTRUM #6

On 03.11. and 24.11. two new newsletters On The ZX Spectrum by Graeme Mason were published.

The newsletter has already been presented in SUC 235. Take a look at https://www.wizwords.net/. It's well worth it.

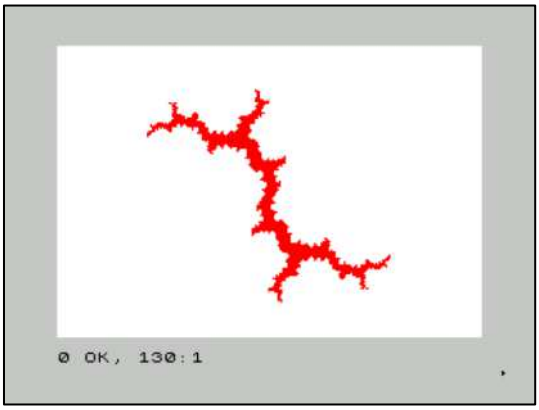
You can subscribe free of charge at

https://onthezxspectrum.eo.page/onthezxspectrum

BASIC-GIMMICK 1

JULIA-QUANTITY

```
  5 REM Julia-quantity
 10 PAPER 7: BORDER 7: INK 2:
    BRIGHT1: CLS
 20 FOR i=-125 TO 125
 30 FOR j=-90 TO 90
 40 PLOT 127+i,85+j
 50 LET zre=i/56: LET zim=j/56
 60 LET k=0
 70 LET temp=zre*zre-zim*zim
 80 LET zim=2*zre*zim+1
 90 LET zre=temp: LET k=k+1
100 IF ABS zre<2 AND k<9 THEN GO TO 70
110 IF k<9 THEN PLOT
    INVERSE 1;127+i,85+j
120 NEXT j
130 NEXT i
```

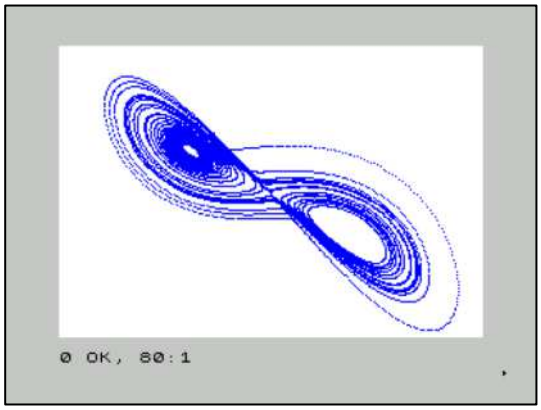


LORENZ ATTRACTOR

```
 10 REM PROGRAM Lorenz Attractor
 20 BORDER 7: PAPER 7: INK 1:
    BRIGHT 1:CLS
 30 LET rho=10: LET sigma=28:
    LET beta=8/3
 35 LET d=.002
 40 LET x=.1: LET y=0: LET z=0
 50 FOR i=1 TO 16000
 60 PLOT 127+5.7*x,87-3*y
 70 LET x=x+d*rho*(y-x):
    LET y=y+d*(x*(sigma-z)-y):
    LET z=z+d*(x*y-beta*z)
 80 NEXT i
```

The larger the loop »i«, the more extensive the graphic becomes. However, details are then lost. It is worth playing with the variables.

The computing times for both programs are long on the Spectrum are long. So a little patience is required!



ZX TOUCH - THE HANDHELD SPECTRUM

BY THOMAS EBERLE

Making the ***Spectrum*** portable is an age-old story. Back in the early 80s, there was a company that offered a kind of case. A Spectrum, cassette recorder, printer and small television were permanently mounted in this case, making the Spectrum almost portable, but also very heavy. The latest computer of this development is the

Omni 128, a Spectrum replica in a 48k housing with batteries and a screen attachment. It works, but is still quite large and the screen consumes a lot of energy.

Retro Computer Limited took a different approach with the ***ZX Spectrum Vega***. The ***ZX Spectrum Vega*** came without a keyboard, was about the size of a ***joypad*** and could be connected to a TV. It was for gaming only and had 1000 games built in, more could be added. The concept was further developed and the ***ZX Spectrum Vega+*** was crowdfunded in 2016. This device was a pure handheld, i.e. the screen is built into the device and no other hardware is required to operate it. Unfortunately, there were some problems, the shareholders of ***Retro Computer Limited*** were not in agreement and in the end this company was liquidated and had only produced 400 of the almost 5000 devices pre-ordered and paid for. In the end, these devices did not fulfill what had been promised. So almost 4500 buyers were disappointed because they got nothing at all and the others got a device of questionable quality. For most others, the desire for a handheld Spectrum remained unfulfilled, even though several consoles offer Spectrum emulators, e.g. ***Nintendo's 3DS*** with ***ZXDS***. In general, many retro consoles, including handhelds, have been released in recent years, but no device specifically for the Spectrum.

In 2022, ***Goran Radan*** from ***Elmar Electronics*** took up this idea. The company was already successfully producing the ***ZX-VGA***, the VGA converter for the Spectrum and the ***ZXEXT*** bus doubler. Now they wanted to go one step further and discussed with ***SINTECH's*** sales department how to proceed. The requirements for the device quickly became clear. All Spectrum games should be playable and easy to transfer. All joystick types must be selectable and the device should have a touchscreen to emulate a keyboard. Special attention was also paid to the quality, a high-quality LCD screen was used and tested buttons and analog stick as used in the Nintendo Switch, as well as a longlasting and powerful battery. Most importantly, we won't say a word about it until it's ready. We didn't want to disappoint the Spectrum world again with a product that will never be released and that's why we won't be able to report on it until November 2023.

Since ***SINTECH*** itself is the exclusive distributor of the device, we will stop raving about it and limit ourselves to the sober facts; others will have to write test reports.

Here are the specs:

Display:
7" LCD IPS display 1024 x 600 px with 50 Hz and touchscreen

Battery:
3000 mAh rechargeable LiPo battery for 46 hours of playtime, rechargeable in 3 hours with 1A power adapter

Connections:
Headphone/speaker connection, MicroSD card slot (FAT 32), USBC charging socket

Controls:
Eight buttons and one analog stick, which can be preset as Kempston/Sinclair joystick or freely assigned

Loudspeaker:
Small 28mm speaker with 1.5W with adjustable volume (also for beeper)

Side lights:
The middle part of the console is made of transparent acrylic and can optionally light up in different colours with built-in LEDs.

Emulation:
The ZX Touch comes with pre-installed games. These games are displayed after switching on and also contain images of the cassette inlets and some descriptions. Additional games can be loaded from the SD card. The selection is made via the touchscreen, where individual settings are also made for control, volume, brightness, screen size, virtual keyboard, pause and reset.

In addition to the Spectrum 48k and 128k devices, there is also the option to activate additional features such as ULAplus mode (extended colour display), interlace mode (higher resolution, flicker-free), or scanlines (retro effect by omitting every 2nd or 3rd line).

The device leaves hardly anything to be desired from a handheld. The emulation is certainly better and, above all, easier to use than any other on ***NDS***, ***PSP***, ***Gamepark*** or the many new retro consoles.

Although the device is fully functional as promised, it has an update function and this is not entirely unimportant. This is because the new device also offers new possibilities, not all of which have yet been used. For example, it is basically WiFi-enabled and also contains a gyroscope sensor. These features are not being used at the moment and there are no applications for them yet. However, this may change soon and updates will follow, which will then be available via the website www.zxtouch.com website. Development is complete, but it is not yet finished.

The console is now being distributed by Sintech:

United Kingdom:
www.sintech-shop.co.uk

Czech Republic/Slovakia:
www.sintech-shop.cz

Germany, Europe and the rest of the Spectrum world:
www.sintech-shop.de

THE »CLUB MAGAZINE« PROJECT

BY JOACHIM GEUPEL

In this short article, I would like to report on the current status of the collection and archiving of our club magazines. The inventory has been completed to the extent that I have recorded all the magazines that were available to me and converted them into PDF files.

My appeal in the last *SUC session* has borne fruit in that some club members have actually come forward who, unlike me, have collected and archived their club magazines *"Spectrum Userclub Wuppertal"* and *"SUC-session"*. My thanks go to *Lothar Ebelshäuser* and *Martin Weltzer* as well as *Franz Lange*, who supported me.

It was interesting to look through all the magazines. As far as the photocopies of the *"Spectrum Userclub Wuppertal"* are concerned, I realize that *Rolf Knorre* is the master of crooked lines and haphazardly glued letters. He didn't take too much care, and towards the end of his work he clearly lacked the desire. It took me quite a lot of work to correct all these at least to the point where they were legible. I also tried to improve the poor printouts from the matrix printers, which also suffered from repeated photocopying. I have not succeeded everywhere. In some cases, areas are missing that got stuck when converting from paper to file due to the apparently automatic feeding of the originals into the photocopier. I have also tried to restore these areas. But where something is missing, I can't add anything. However, this is noted in the PDF files.

While editing, I came across a few old acquaintances - so to speak. I would like to say a big hello to *Christof Odenthal* and *Harald Lack*, who are still contributing articles to the magazine. Ben Versteeg was also involved for a while, and finally I came across my own letter.

Editing it was a real journey through time, even if it involved a lot of work. But time travel is notoriously exhausting, as *Dr. Emmett "Doc" Brown* and *Marty McFly* can certainly confirm.

As far as *Rolf Knorre* himself is concerned, I haven't found any information about him on the Internet. It would be interesting to find out what became of him. However, the "User Club" business model, whether Spectrum or Schneider, seems to have been reasonably successful. The information I have received about him is not too flattering. But that's all moot, as the club has been kept alive by Thomas ever since.

Unfortunately, not all the magazines are available. Once again, club members are called upon to dig in their archives. Perhaps they will turn up after all. The missing issues are listed here and highlighted in colour in the complete list.

Some of the issue numbers are duplicated; I have simply labeled them *"a"* and *"b"* for my own convenience. From issue *SUC-Session 188b* onwards, the club magazines are published bilingually in German and English. These are also labeled separately. Where this note is missing, the magazines are only available in German. I took over as editor-in-chief from *SUCSession* 221. This means that I have already produced 26 issues, 13 in German and 13 in English.

And here comes the inevitable call to club members to search their cellars and attics to see if there are any magazines still lying around somewhere. You can send them to me, either as a good scan or as booklets, which I will then send back to you. I hereby solemnly promise that I will not put a coffee cup on it. I didn't do that with the last issues either.

The following issues are missing:

Spectrum User Club Wuppertal 01
Spectrum User Club Wuppertal 02
Spectrum User Club Wuppertal 03
Spectrum User Club Wuppertal 04
Spectrum User Club Wuppertal 05
Spectrum User Club Wuppertal 06
Spectrum User Club Wuppertal 07
Spectrum User Club Wuppertal 08
Spectrum User Club Wuppertal 09
Spectrum User Club Wuppertal 10
Spectrum User Club Wuppertal 11
Spectrum User Club Wuppertal 12
Spectrum User Club Wuppertal 13

SUC Session 118

(It is not clear whether the following editions even exist)

SUC Session 119
SUC Session 120

SUC Session 211
SUC Session 212
SUC Session 213
SUC Session 214
SUC Session 215
SUC Session 216
SUC Session 217
SUC Session 218

At least the first 13 magazines should be available at Binarium. *Rolf Knorre* has passed on all the copies to the operator of the online museum.

THE COLLECTION NOW LOOKS AS FOLLOWS:

SUCW 01 missing
SUCW 02 missing
SUCW 03 missing
SUCW 04 missing
SUCW 05 missing
SUCW 06 missing
SUCW 07 missing
SUCW 08 missing
SUCW 09 missing
SUCW 10 missing
SUCW 11 missing
SUCW 12 missing
SUCW 13 missing

1984

SUCW 14 – 11 1984
SUCW 15 – 12 1984

1985

SUCW 16 – 01 1985
SUCW 17 – 02 1985
SUCW 18 – 03 1985
SUCW 19 – 04 1985
SUCW 20 – 05 1985
SUCW 21 – 06 1985
SUCW 22 – 07 1985
SUCW 23 – 08 1985
SUCW 24 – 09/10 1985
SUCW 25 – 11 1985
SUCW 26 – 12 1985

1986

SUCW 27 – 01 1986
SUCW 28 – 02 1986
SUCW 29 – 03 1986
SUCW 30 – 04 1986
SUCW 31 – 05 1986
SUCW 32 – 06 1986
SUCW 33 – 07 1986
SUCW 34 – 08 1986
SUCW 35 – 09 1986
SUCW 36 – 10 1986
SUCW 37 – 11 1986
SUCW 38 – 12 1986

1987

SUCW 39 – 01 1987
SUCW 40 – 02 1987
SUCW 41 – 03 1987
SUCW 42 – 04 1987
SUCW 43 – 05 1987
SUCW 44 – 06 1987
SUCW 45 – 08 1987
SUCW 46 – 09 1987
SUCW 47 – 10 1987
SUCW 48 – 11 1987
SUCW 49 – 12 1987

1988

SUCW 50 – 01 1988
SUCW 51 – 02 1988
SUCW 52 – 03 1988
SUCW 53 – 04 1988
SUCW 54 – 05 1988
SUCW 55 – 06/07 1988
SUCW 56 – 07/08 1988
SUCW 57 – 09 1988
SUCW 58 – 10 1988
SUCW 59 – 11 1988
SUCW 60 – 12 1988

1989

SUCW 61 – 01 1989
SUCW 62 – 02 1989
SUCW 63 – 03 1989
SUCW 64 – 04 1989
SUCW 65 – 05 1989
SUCW 66 – 06 1989
SUCW 67 – 07 1989
SUCW 68 – 08 1989 (no date)
SUCW 69 – 09 1989
SUCW 70 – 10 1989
SUCW 71 – 11 1989
SUCW 72 – 12 1989

1990

SUCW 73 – 01 1990
SUCW 74 – 02 1990
SUCW 75 – 03 1990
SUCW 76 – 04 1990
SUCW 77 – 05 1990
SUCW 78 – 06/07 1990
SUCW 79 – 08 1990
SUCW 80 – 09 1990
SUCW 81 – 10 1990
SUCW 82 – 11 1990
SUCW 83 – 12 1990

1991

SUCW 84 – 01 1991
SUCW 85 – 02 1991
SUCW 86 – 03 1991
SUCW 87 – 04 1991
SUCW 88 – 05 1991
SUCW 89 – 06 1991
SUCW 90 – 07 1991
SUCW 91 – 08 1991
SUCW 92 – 10 1991
SUCW 93 – 11 1991
SUCW 94 – 12 1991

1992

SUCW 95 – 01/02/1992
SUCW 96 – 03 1992
SUCW 97 – 04 1992
SUCW 98 – 05 1992
SUCW 99 – 06 1992
SUCW 100 – 07 1992
SUCW 101 – 08 1992
SUCW 102 – 09 1992
SUCW 103 – 10 1992
SUCW 104 – 11 1992
SUCW 105 – 12 1992

1993

SUCW 106 – 01 1993
SUCW 107 – 02 1993
SUCW 108 – 03 1993
SUCW 109 – 04 1993
SUCW 110 – 05 1993
SUCW 111 – 06 1993
SUCW 112 – 07 1993
SUCW 113 – 08 1993
SUCW 114 – 09 1993
SUCW 115 – 10 1993
SUCW 116 – 11 1993
SUCW 117 – 12 1993

1994

SUC 118 missing
SUC 119 missing
SUC 120 missing
SUC 121 – 04 1994
SUC 122 – 05 1994
SUC 123 – 06 1994
SUC 124 – 07 1994
SUC 125 – 08 1994
SUC 126 – 09 1994
SUC 127 – 10 1994
SUC 128 – 11 1994
SUC 129 – 12 1994

1995

SUC 130 – 01 1995
SUC 131 – 02 1995
SUC 132 – 03 1995
SUC 133 – 04 1995
SUC 134 – 05 1995
SUC 135 – 06 1995
SUC 136 – 07 1995
SUC 137 – 08 1995
SUC 138 – 09 1995
SUC 139 – 10 1995
SUC 140 – 11 1995
SUC 141 – 12 1995

1996

SUC 142 – 01 1996
SUC 143 – 02 1996
SUC 144 missing
SUC 145 – 04 1996
SUC 146 – 05 1996
SUC 147 – 06 1996
SUC 148 – 07 1996 (mistakenly as 149)
SUC 149 – 08 1996 (mistakenly as 148)
SUC 150 – 09 1996
SUC 151 – 10 1996
SUC 152 – 11 1996
SUC 153 – 12 1996

1997

SUC 154 – 01 1997
SUC 155 – 02 1997
SUC 156 – 03 1997
SUC 157 – 04 1997
SUC 158 – 05 1997
SUC 159 – 06 1997 missing
SUC 160 – 07 1997
SUC 161 – 08 1997
SUC 162 – 09 1997
SUC 163 – 10 1997
SUC 164 – 11 1997
SUC 165 – 12 1997

1998

SUC 166 – 01 1998
SUC 167 – 02/03 1998
SUC 168 – 04/05 1998
SUC 169 – 05/06 1998
SUC 170 – 09/10 1998
SUC 171 – 11/12 1998

1999

SUC 172 – 01/02 1999
SUC 173 – 03/04 1999
SUC 174 – 05/06 1999
SUC 175 – 07/08 1999
SUC 176 – 09/10 1999
SUC 177 – 11/12 1999

2000

SUC 178 – 01/02 2000
SUC 179 – 03/04 2000
SUC 180 – 05/06 2000
SUC 181 – 07/08 2000
SUC 182 – 09/10 2000
SUC 183 – 11/12 2000

2001

SUC 184 – 01/02 2001
SUC 185 – 03/04 2001
SUC 186a – 05/06 2001
SUC 186b – 07/08 2001
SUC 187 – 09/10 2001
SUC 188a – 11/12 2001

2002

SUC 188b – 01/02 2002 German/English
SUC 189 – 03/04 2002 German/English
SUC 190 – 05/06 2002 German/English
SUC 191 – 07/08 2002 German/English
SUC 192 – 09/10 2002 German/English
SUC 193 – 11/12 2002 German/English

2003

SUC 194 – 01/02 2003 German/English
SUC 195 – 03/04 2003 German/English
SUC 196 – 05/06 2003 German/English
SUC 197 – 07/08 2003 German/English
SUC 198 – 09/10 2003 German/English
SUC 199 – 11/02 2004 German/English

2004

SUC 200 – 04 2004 German/English
SUC 201 – 08 2004
SUC 202 – 03 2005
SUC 203 – 08 2005

2005

No issues were published in 2005

2006

SUC 204 – 02 2006
SUC 205 – 03 2006
SUC 206 – 08 2006
SUC 207 – 11 2006

2007

SUC 208 – 03 2007
SUC 209 – 05 2007
SUC 210 – 10 2007 missing
SUC 211 missing
SUC 212 missing
SUC 213 missing
SUC 214 missing
SUC 215 missing
SUC 216 missing
SUC 217 missing
SUC 218 missing

2008-2015

The situation between 2008 and 2015 is uncertain, or probably no issues have been published. It starts again from 2016

2016

SUC 219/72 – 2016
SUC 220/73 – 2016

2017

Apparently no issues were published in 2017.

2018

SUC 221/74 – 03 2019 German/English
(With SUC 221, me, Joachim, took over the SUC session from Thomas and it has been published fairly regularly)

2019

SUC 222/75 – 03 2019 German/English
SUC 223/76 – 05 2019 German/English
SUC 224/77 – 09 2019 German/English

2020

SUC 225 – 03 2020 German/English
SUC 226 – 08 2020 German/English
SUC 227 – 11 2020 German/English

2021

SUC 228 – 03 2021 German/English
SUC 229 – 08 2021 German/English
SUC 230 – 12 2021 German/English

2022

SUC 231 – 03 2022 German/English
SUC 232 – 08 2022 German/English
SUC 233 – 12 2022 German/English

2023

SUC 234 – 03 2023 German/English
SUC 235 – 09 2023 German/English

CHIP8 EMULATOR FOR ZX SPECTRUM 48K

BY THOMAS TOBINHA

The early video games were programmed in a virtual machine. They ran on a processor with 4 KB of RAM, the first 512 bytes of which contained the operating system. This area contained the interpreter and some tools that could be called up (e.g. screen clearing).

At that time, around 1970, there was very little memory (4096 bytes) and very simple video hardware with 64x32 pixels driven by a *Telmac-1800* processor. There was also no real keyboard, only 16 keys for entering hex numbers. The computer was available as a kit for around 100 USD. At the same time, various kits

with a hex keyboard, processor and single-line LED row like a pocket calculator appeared.

Programming was done on paper, then the OP codes were picked out of a table and written down. This sequence of numbers had to be entered into the keyboard. At least it was possible to save to cassette and load from there. In the USA you could get a kit for about 100 USD. At that time, games were available in magazines for typing.

Chip8 assembler code consists of easy-to-remember OP codes, each 2 bytes long. The first digit indicates the group, e.g. 1 for jump instructions, two for subroutines, etc.

After all, in 1970 there was already four times as much memory as the *ZX80* and real video hardware,

```
0200 : label0012      17 8c       jump gmain    ;78c
0202 : enemyReverseX  6f 00       vf := $00
0204                  82 f7       v2 =- vf
0206                  00 ee       return
0208 : enemyReverseY  6f 00       vf := $00
020a                  83 f7       v3 =- vf
020c                  00 ee       return
020e : enemyReverseFrame
020e                  6f 00       vf := $00
0210                  8a f7       va =- vf
0212                  00 ee       return
0214 : calcEnemyCoords
0214                  8b 00       vb := v0
0216                  8c 10       vc := v1
0218                  8d 80       vd := v8
021a                  42 00       if v2 == $00 then
021c                  12 30       jump skip0019 ;230
021e : skip0017       80 24       v0 += v2
0220                  8f 40       vf := v4
0222                  8f 05       vf -= v0
0224                  3f 00       if vf != $00 then
0226                  22 02       enemyReverseX ;202
```

the *ZX80* only came out 10 years later.

After home computers became widely available, the system spent a long time in the shadows until the first emulator for the *HP-48* pocket calculator came out. From then on, you could play old games in math lessons. Soon after, a new standard with 128x64 pixels was introduced. There are now several standards, even in color and with 256x192 pixels (i.e. 48 KB screen memory and therefore too much for *ZX Spectrum*).

The emulator emulates *Chip8* and *Super Chip8* on the *ZX Spectrum*. The tape contains my own game and some from other developers. There is also a Java file which copies a game into the emulator and builds a new tape from it. Together with a batch file you can start any game with a double click.

There are some quite entertaining games and emulators for various computer systems. With Rush Hour you can spend many hours solving complicated puzzles, with *Cave Explorer* you can explore a large landscape, and there are also Mine Sweeper, Tetris and others.

There is an active scene around *Chip8*, i.e. new games and emulators are constantly being developed. Every year in October, the *Octo-Jam* takes place, where programmers present their latest games.

It is easy to program games in *Chip8* and learn how to program in assembler at the same time, as there are only a small number of commands and a very limited range of functions.

You can try out the compiler and the emulator on John Ernest's website. Games, whether in source code or compiled, can simply be moved to the editor with the mouse.

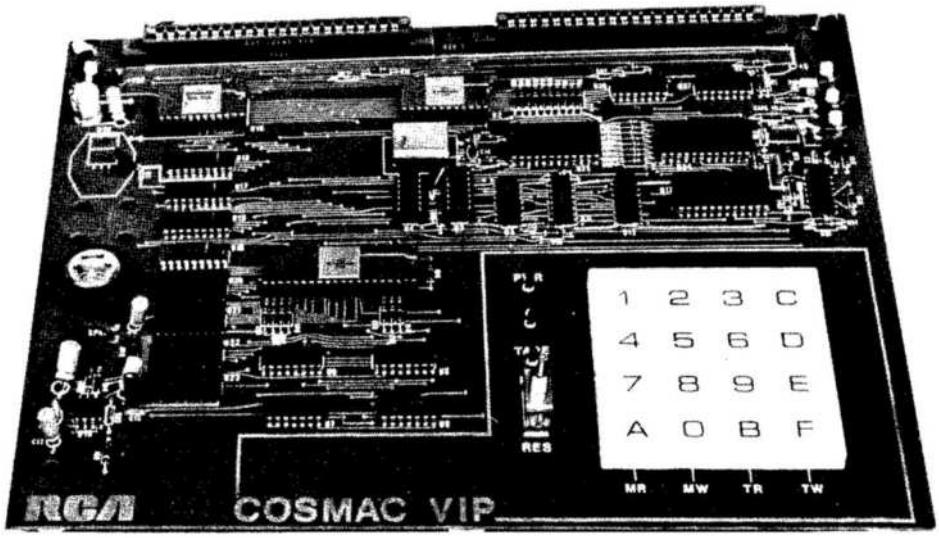
My own IDE with compiler, debugger, sprite and tile editor can be downloaded from *Github*, it is still under development and gets an update almost every week.

Chip8 is also a playground for anyone who wants to program a virtual computer including CPU, display and keyboard. The emulator for the *ZX-Spectrum* consists of about 6000-7000 lines of Z80 assembler, most of it hand-optimized. The code does not use any routines from the ROM, only the character set comes from the Rom.

Most of the optimization is related to the display, when Chip8 draws a sprite this must happen very quickly. Depending on the resolution, 1x1, 2x2 or 4x4 pixels are filled on the ZX screen for each *Chip8* pixel. Sprites consist of at least one byte (8x1 pixels) and a maximum of 16x16 pixels, i.e. 32 bytes.

The emulator either draws every change immediately, which is positive when debugging, or the entire screen (or only the changed lines) in the vertical interrupt.

The *Chip8*-OP codes are interpreted directly, so the emulator is so fast that you have to slow it down for some games, otherwise they become unplayable.



There is also a built-in debugger, built-in games and even support for *Kempston* joysticks.

INSTALLATION

The emulator can be downloaded from [1]. Either as a .zip or via Git-checkout and stored in any directory. Initially, only the file chip8emu.tap is required to play. This can be started directly in a ZX Spectrum emulator or on real hardware.

To start games directly, loadgame.cmd must be adapted. Replace `d:\Emulator\z80\dev\chip8` with the path where the Chip8 emulator is located and

`C:\Program Files (x86)\Fuse\fuse.exe` with the path to your *ZX Spectrum* emulator.

Next, you can double-click a .ch8 file in Windows and select the loadgame.cmd file under Open with. *Java* must be installed for *Loadgame* [8].

```
java -jar
D:\Emulator\z80\dev\chip8\tapegen.jar intro
in-
put=D:\Emulator\z80\dev\chip8\chip8emu.tap
out-
put=D:\Emulator\z80\dev\chip8\chipgame.tap
game=%1
```

start

```
"C:\Program Files (x86)\Fuse\fuse.exe"
D:\Emulator\z80\dev\chip8\chipgame.tap
```

To use the emulator in the source code, you need *DeZog* and *Visual Studio Code*. After installation, you can directly open the directory with *Visual Studio Code*.

If you want to convert games to Z80, you need the *j-octo IDE* and the *ZX Chip8 Runtime*, which you can also download from *Git*. If Java is already installed, you can start the IDE by double-clicking on the .jar file or via command line or batch file with *java -jar*.

If you want to see the source code, you can check out the IDE directly with Eclipse. *The ZX Chip8 Runtime* must be opened again with *Visual Studio Code* with *DeZog* installed.

All parts are still under development and there will be some updates.

GAMES:

There are hundreds of games that can be downloaded.

To get the games into the program without an assembler, there is the Java program chip8tapegen. There is a batch file for this. This must be customized, e.g. the path of the emulator must be entered, as well as the path where the Git repository of the emulator was checked out.

There are four places for games:

1. the intro. The demo that is shown at the start normally starts here, but you can overwrite it with a game. The file startgame.bat creates a new tape with the first parameter and starts it.
2. the memory. Games can be loaded between the end of the emulator and the end of the memory ($FFFF). This requires Visual Studio code with an assembler.
3. to tape. The Load command from the main menu exits the emulator and loads the next game from the cassette. This is useful when playing on real hardware.
4. on the hard disk. chip8tapegen replaces the emulator intro with a game.

Don't miss this year's *Octo-Jam* [6]

ASSEMBLER

Although the emulator is sufficiently fast, the IDE offers the possibility to convert a disassembled game to Z80. The game then runs almost as fast as a game written in assembler, of course not as fast as hand-optimized assemblers, but at least 3 of the 16 *Chip8* registers are kept in Z80 registers (v0, vf and i) and there is a rudimentary optimization (peep hole, registers and shortcuts like or a instead of cp 0).

To compile a game to Z80, the *Chip8* runtime must first be checked out [3]; *Visual Studio* with *Dezog* installed [4] and *the J-Octo IDE* [2] are required for this.

Now you can either load a game in source code (.8o) or a compiled game and convert it to Z80 assembler at the push of a button. Not all games can be converted, because some games use self-modifying code or calculated jumps. Both are not (yet) supported by the compiler.

After converting and selecting Z80 Assembly, you can copy the entire code and paste it into Visual Studio in the *Chip8Game*.asm file from line 2. Then compile and test.

The tape in the repository also contains the game Enter The Mine.

LINKS

1. 1st ZX Chip8 emulator:
   `https://github.com/tquester/zxchip8`
2. J-Octo IDE:
   `https://github.com/tquester/J-Octo-Chip8-IDE`
3. ZX Chip8 runtime:
   `https://github.com/tquester/ZXChip8Runtime`
4. DeZog: Z80 Assembler for Visual Studio:
   `https://github.com/maziac/DeZog`
5. Chip8 database with many games:
   `https://archive.org/details/chip-8-games`
6. Octo-Jam 10, this year's competition:
   `https://itch.io/jam/octojam-10`
7. John Ernest. Chip8 IDE:
   `http://johnearnest.github.io/Octo/`
8. Java
   `https://www.java.com/en/download/help/download_options.html`

Source RCA COSMAC VIP:

`https://blog.glitch.land/en/posts/chip-8/)`

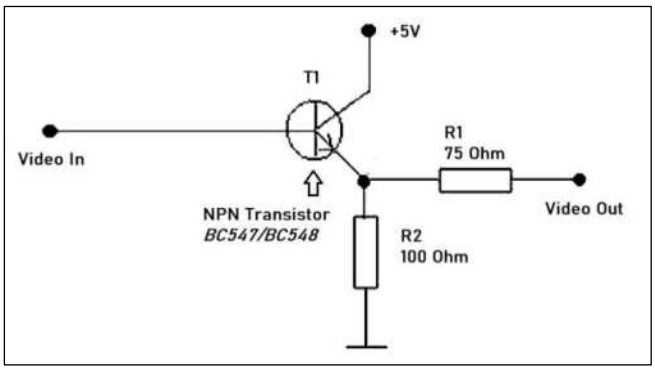
ALTERNATIVE VIDEO OUTPUT FOR THE SPECTRUM

BY JOACHIM GEUPEL

For the *Spectrum*, in general for almost all computers with the well-known RF module for connection to the antenna input of the TV set, there is a small circuit consisting of a transistor and a maximum of three resistors, with which the FBAS video signal can be tapped before the modulator, amplified and output to a corresponding monitor. This circuit is well known, widely used and is generally sufficient. I first came across this circuit in the electronics magazine *ELRAD* from February 1983, *ZX-Bit#20*.

The transistor in the circuit decouples the video signal and amplifies the current, as the FBAS signal is decoupled at the emitter. Clearly, this circuit works, but it is the absolute minimum solution, apart from a direct decoupling of the video signal at the modulator input.

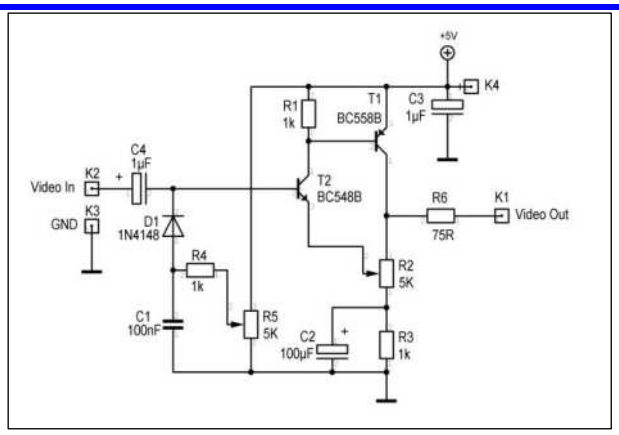
Admittedly, this circuit has always bothered me a little. It is too simple for me and does not take into account the voltage drop across the base-emitter diode of the transistor. In this case, the CVBS signal that can be tapped at the emitter is almost 0.6V lower than the signal that is coupled in at the base. It is therefore possible that the image on a monitor is actually slightly worse than it would be without the transistor. The only thing that the circuit certainly does is to decouple the ULA from the monitor input, thereby protecting the ULA.



Transistor circuit

But since I have a *VGA-Joy!* and a *ZX-HD*, I didn't really care. Interface to the Edge Connector, monitor to the interface - perfect! What more could you want! But still...

While sorting through my old electronics magazines, I came across the circuit collections from the old Elektor magazines from the late 90s. These magazines have the advantage that most of the circuits do not require any kind of controller or processor. While rummaging through them, I came across the following circuit. It was not the first time I had come across this circuit, but now I have finally entered the circuit diagram into my PCB CAD and created and printed out the board.

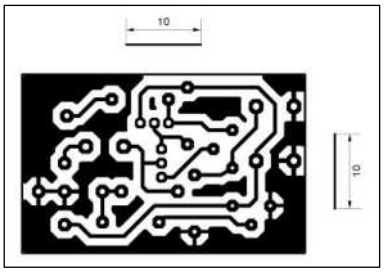


Circuit with two transistors

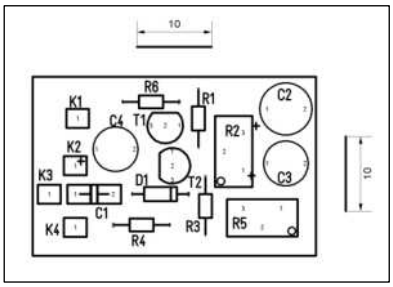
Of course, this circuit is a bit out of date in view of the VGA-Joy! and the ZX-HD interface. Nevertheless, I am presenting it here because there are still users who do not have these interfaces. With a little skill, patience and a soldering iron, the circuit presented here can be built on a breadboard. Alternatively, you can of course copy the board layout and etch a board for it.

CIRCUIT DESCRIPTION

The video signal coming from the ULA is coupled to K2. The capacitor not only decouples the video signal from the amplifier but also prevents the DC voltage, which comes via diode D1, resistor R4 and potentiometer R5, from being decoupled into the spectrum.



Layout



Assembly

The video signal is amplified by T2, rotated by 180° at the collector and fed to the base of T1. This rotates it by another 180° so that the phase is correct again. The signal is finally decoupled at the collector of T2 and output via the 75Ω resistor R6. Potentiometer R5 is used to apply a DC voltage component to the base of transistor T2 via D4 and R1, which is added to the video signal via D1. Turning R5 raises or lowers the voltage of the video signal at the collector of T2. This has an influence on the black display of the image. The entire video signal is amplified or attenuated with potentiometer R2. The 75Ω resistor R6 adapts the signal

to the input of the monitor. Resistors R3 and R4 prevent a short circuit from occurring and the transistors from dying when the potentiometers are turned to their respective lowest impedance end stops. Capacitor C2, which is arranged in parallel with R3, short-circuits the AC voltage applied to R3 so that nothing changes in the amplification, which is set with potentiometer R2.

ADJUSTMENT

The adjustment is simple. Both pots are placed in the middle. By turning both pots alternately, the image on the monitor is adjusted until it is correct or matches the user's taste.

BOARD PRODUCTION

Even though it may bore some people, I will now describe how I went about making the circuit board using the resources in my drawers. To rebuild the circuit, I dug out the old equipment for exposing and developing circuit boards. The bottle of etchant I had put in there before the pandemic had been sitting around in a (locked) cupboard since the last etching session. The 500W Nitraphot lamp that I used 30 years ago to expose the circuit boards of my masterpieces still worked, which I was very pleased about. The layout was also printed out relatively quickly. So there was nothing in the way of the realization of the mini project.

First, of course, I entered the circuit from the Elektor circuit double issue from 1998 into my circuit board CAD. That was relatively easy. It was a little more difficult to fit the circuit onto a circuit board large enough to fit into the housing of the modulator. In the end, it wasn't really a problem, as it consists of only 13 components and four solder lugs.

It was clear from the outset that the application of the laser toner on foil for exposure would not be dense enough. However, if two foil printouts are placed precisely on top of each other, they are virtually opaque to UV light. To make it easier to position the two films on top of each other, there are two lines above and to the right of the layout. If these are precisely aligned, the two printouts will be perfectly superimposed. The other purpose of these lines is that they are exactly 10 mm long. They can therefore be used to determine the exact size of the photocopy or scan.

My Nitraphot lamp has 500 watts of power and is bright enough to illuminate the place where I live. It was also sufficient to expose the circuit board. To do this, I placed the circuit board on a base and covered it with a clean sheet of glass. The Nitraphot lamp was positioned exactly 40 cm above the center of the board and exposed for exactly six minutes. I researched the exposure time on the Internet.

Both the power of the lamp and the distance to the circuit board must be taken into account for the exposure. If a lamp is rated at 250 watts, it is logically exactly half as bright as my 500 watt lamp. As the brightness decreases in relation to the distance squared, the values on the Internet are based on a distance of 20 cm from the lamp to the circuit board, the lamp was mounted at a distance of 40 cm from the circuit board and the exposure time of six minutes was observed. This arrangement seemed right to me, as a 500 watt lamp also gets very hot. It should be noted that different information on exposure times can be found on the Internet.

After exposure, the outline of the layout was already visible on the board. Development with an appropriate developer was quick and, to my delight, very clean and precise.

Finished etched circuit board and printed layout

I used sodium persulphate as the etching agent. My prepared solution was already several years old. However, as it had been stored at room temperature in a dark cupboard, it still worked well.

The etching process took just under 15 minutes in a glass dish in which the etchant was heated to a temperature of between 50°C and 60°C and which I constantly monitored with an infrared thermometer. As a glass dish is not a bubble or spray etcher, I had to move the dish constantly.

Sodium persulphate has the advantage over ferric chloride that it is transparent once it has dissolved. Iron III chloride is an unattractive brown broth that also leaves stains if you spill it. I was therefore able to observe the etching process closely.

TEST AND INSTALLATION

After assembling the board, I first tested it. Connected to a laboratory power supply set to 5V and a 3 MHz signal fed to "Video In" via a function generator and set to 1.5V, I was able to measure a corresponding signal at the output, Video Out, which could be adjusted by turning the potentiometers.

I still had a video modulator in my collection. I took it apart, which, contrary to expectations, proved to be relatively difficult because there is a shielding plate in the modulator that is soldered to the circuit board. It was not easy to remove this shielding plate from both the housing and the circuit board.

There is a foil under the circuit board, between the circuit board and the bottom cover. This must be reinserted at this point to prevent a short circuit.

When designing the layout, I paid attention to the positions of the +5V feed and the FBAS signal from the ULA, as well as the connection to the output. There is a GND connection on the amplifier board as a solder lug labeled "K3". This is unnecessary and does not need to be fitted, as the earth surface of the amplifier is soldered to the outer shielding plate. The modulator housing is in turn soldered to the ground plane located under the modulator. This allows the circuit to have a

GND connection without any problems and K3 can remain unpopulated.

I simply connected the Spectrum48, in which I installed the circuit, to an FBAS monitor. I bought this from Pollin a few years ago. To my delight, I immediately got a good picture. I adjusted the picture by turning both potentiometers so that this Spectrum now has a pretty good picture.

It should be noted that the picture is not as good as a VGA-Joy or a ZX-HD, but it is a whole class better than the amplifier solution with just one transistor. For comparison, I wrote a small program that displays the colour staircase in two brightness levels. The program can be found below.

CONCLUSION

From my point of view, the experiment was worthwhile. I have once again produced a circuit board that makes me want more. The result, namely a colour-intensive and sharp display of the image, is surprisingly good.

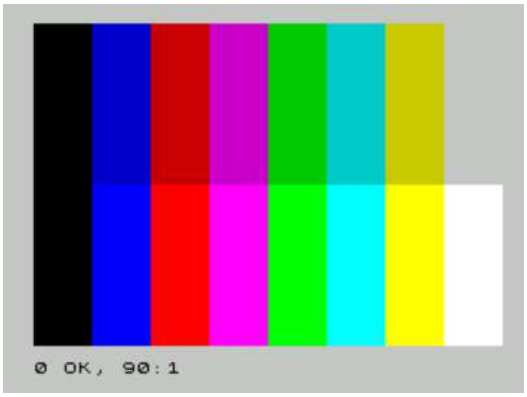
What the circuit does not and cannot do is make the image display better, or even bring it up to the level of a VGA Joy! than the Spectrum offers. The interference that was previously present remains. However, the somewhat more complicated circuit is a better solution than the familiar one-transistor circuit.

PARTS LIST

R1, R3, R4	1kΩ 1%
R2, R5	5k Ω (spindle trimmer)
R6	75 Ω, 1%
T1	BC558B, TO92
T2	BC548B, TO92
D1	1N4148, DO35
C1	100nF, ceramic
C2	100µF, electrolytic capacitor
C3, C4	1µF, electrolytic capacitor
K1-K4	Solder lugs

LISTING COLOUR BAR

```
10 CLS
20 FOR c=0 TO 1
30 BRIGHT c
40 FOR b=0 TO 10
50 FOR n=0 TO 7
60 PRINT PAPER n;"    ";:
   REM four blanks
70 NEXT n
80 NEXT b
90 NEXT c
```



Screenshot of the result after installation and adjustment

MY LATE LOVE FOR THE SINCLAIR QL

BY ROGER BOESCH

I also "grew up" with Sinclair computers and I was particularly taken with the ZX Spectrum back then. After that, however, I became unfaithful to the Sinclair world. Actually, the Sinclair QL would have been the natural next evolutionary step for me. But things turned out differently and so I switched to the Atari ST and later the Amiga 2000. The decisive factor at the time was probably the fact that the colour and sound options on the QL were quite modest. I was also impressed by both GEM on the Atari and the Workbench on the Amiga.

Today (after more than 30 years of working as a software engineer) things are a little different and my fascination is more with hardware, OS and programming languages. I now (again) own all the Sinclair computers that have ever existed, as well as tons of books, magazines, software, etc. Is that still collecting or already hoarding ;)?

This also awakened my belated love for the QL. But this time I started to learn the system properly. QDOS, toolkits, SuperBASIC and everything else that goes with it. My knowledge of C on various platforms and assemblers from the ST and Amiga also helped and were relatively easy to transfer to the QL. The goal was

quickly set: I wanted to write a game in each of the three languages.

I have summarized this project in a small series of articles and I hope it is also fun for everyone whose love actually lies more with Speccy or ZX81...

THE FIRST STEPS

As a first step, I sat down at the QL and simply started to try out "things". With Microdrive and standard

hardware, it was relatively difficult... So I "quickly" upgraded the QL with

vDrive, Tetroid interface, Schoen keyboard and floppy drive. Original hardware is also fun, but a few achievements from the "modern era" help to keep the fun going. The CF card and vDrive in particular are game changers. Then I got to work on the software. QDOS and SuperBASIC were quickly understood, I spent a little more time getting to know all the toolkits and understanding how they are loaded and used, especially in the different combinations. Toolkit II in particular provides a large number of new and extended SuperBASIC commands.

One of my "highlights" is ED, a really useful full-screen editor, or key combinations such as <ALT><ENTER> with which you can repeat the last command you typed (how long have I been looking for that...)

EMULATOR VS. HARDWARE

Despite all the hardware, I use an emulator very often. Not only to program, but above all to better understand the entire system. I have rewritten sQlux for my purposes. Why? Debugging real hardware is much more difficult; this way I can look at every file access, understand the connections and (not unimportantly) extend the emulator according to my needs. But more on that later...

But also for programming, it is much easier to use a modern editor and execute the code directly in the emulator. The disadvantage is that transferring the almost finished program to the QL is unfortunately not as easy as it could be, but more on that later.

GAMES IN SUPERBASIC

BASIC doesn't exactly have the reputation of being fast, but with SuperBASIC and a few simple tricks you can develop relatively funny (albeit simple) games. Of course, it can't be compared with programs written in assembler or C, but that's not the point for now.

In this first article I would like to briefly explain the structure, in part 2 I will finish the whole game and in further parts I will write the same game in C. But back to our SuperBASIC game. The idea is to write a game similar to "Snake", but in an as yet unknown version. But let's start from the beginning.

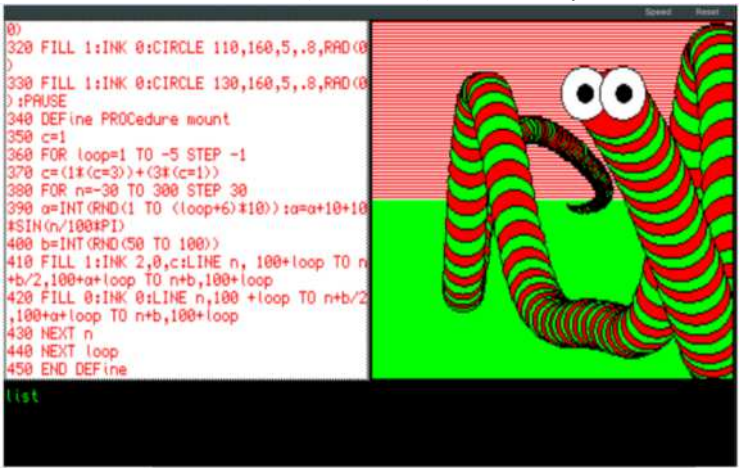
STRUCTURE OF A GAME IN SUPER-BASIC

SuperBASIC offers excellent possibilities for structuring a program and dividing it into individual modules. The main loop always looks the same in all my games:

```
10 Draw_Screen
20 REPeat game_loop
30   Handle_Input
40   Game_Logic
50   IF game_quit THEN EXIT game_loop
60 END REPeat game_loop
70 STOP
```

This is known as a "game loop" and looks similar on all platforms and in all programming languages. The advantage of such a structure is that it can be used again and again in the same form and (even more importantly) the individual functions can be implemented independently of each other step by step. It also promotes structured programming, which can quickly become important, especially in BASIC. Due to BASIC, I concentrate on games that use only one screen, i.e. do not require scrolling.

This screen (or different variants/levels) are drawn in the Draw_Screen function. There are basically two different graphics modes available on the QL. The high-resolution mode (MODE 512) would be perfect due to the resolution of 512x256 pixels, but it is not possible to maintain a sufficient speed in SuperBASIC. The next "smaller" mode (MODE 8) then only consists of



256x256 pixels, but the main problem remains that you are still working with lines and pixels, whereby up to 65536 pixels have to be filled per "frame". Too much for SuperBASIC. The obvious solution is therefore to use PRINT and AT in combination with UDGs (User defined Graphics). Unfortunately, this is also not a viable solution on the QL (in contrast to Speccy), as UDGs are always only 5x9 pixels in size and therefore always have a border. Whew!

However, I found an interesting solution to this problem in the book "QL Gamesmaster". It simply introduces a "new" graphics mode. Although MODE 8 is used, it is controlled as "text mode" with 32x32 characters. This reduces the maximum number of characters to 1024 and each of these characters uses a UDG of 8x8 pixels. Perfect, exactly what we need!

We'll take a look at how this works in part 2, together with a finished game based on it. Until then, stay curious!

LINKS:

QDOS:
https://github.com/SinclairQL/QDOS-Companion/blob/main/QDOS_Companion.pdf
SuperBASIC reference:
https://superbasic-manual.readthedocs.io/en/latest/FrontMatter/Toolkits.html
Tetroid:
https://oldmachinery.blogspot.com/2017/11/sinclair-ql-tetroid-disk-interface.html
vDrive:
https://vdrivezx.com/vdriveql/
Toolkit II:
https://www.lingula.org.uk/~steve/share/ToolKit-II-Manual.pdf
Emulator:
https://github.com/rogerboesch/iQL

WILD PIXELS
HOW THE IMAGE GETS ONTO THE SCREEN
»THE APPLE-1«
BY CHRISTOF ODENTHAL

I had previously thought the Apple-1 was a "normal" home computer in the style that was common in the early 1980s, until I recently took a closer look at it. It actually has a rather unexpected screen layout from today's perspective. It can only display text, but how it does this is curious - more on this later. You have to look at the computer in a chronological context to understand why certain design decisions were made.

Der Apple-1, from: Bobo11 - File:Museum-Enter-Apple-1-6094652.jpg, CC BY-SA 3.0,
https://commons.wikimedia.org/w/index.php?curid=63496946

STATE OF THE ART IN THE 70S

The large mainframes and mini-computers of the time had no integrated graphics card. So-called

TTY terminals (teletypewriters) were connected via serial lines, which were responsible for the input and output of text, but had no intelligence of their own. In principle, they were little more than extended keyboards and screens. One of the first home computers (if not the first) was the MITS Altair 8800 from 1974, a replica of which, the IMSAI 8080 introduced in 1975, may be familiar to you from the film "WarGames" (1983) with Matthew Broderick. Both computers also had no integrated graphics and keyboard; you had to connect an external (expensive) TTY terminal or make do with the lamps and switches on the front panel for input and output. A small side note on "WarGames" - the reason for using a computer that was outdated in 1983 was that the producers thought that a teenager could not afford a more modern computer.

THE APPLE-1

Now a little background on the Apple-1: it was developed by Steve Wozniak from March 1975 and the first prototype was ready in July 1976. The processor offered a choice between the 6800 and the much cheaper 6502 with a clock speed of approx. 1 MHz. The computer was equipped with 4 KB RAM as standard. The ROM was only 256 bytes in size and contained the now famous "WozMon", which made it easy to examine and change memory locations and start machine programs. The Apple-1 had a character set of only 64 characters (i.e. capital letters and symbols only) and could display 40x24 characters of black and white text via composite video signal on a TV or monitor. Each character was 8 pixels high and 5 pixels wide plus two pixels spacing, i.e. 7x8 and a total of 280 pixels horizontally and 192 vertically. It was only manufactured until August 1977 and sold at a price of $666.6 (later $475) by the Byte Shop as a finished model in a wooden case - an estimated 200 were built. When the Apple-1 was released shortly thereafter, Apple offered an exchange program in which many Apple-1s were destroyed after being returned - which is why it is so rare and valuable today. Around 62 units still exist today in varying condition. One model fetched $905000 (approx. €716000) at auction! Even a faithful replica is expensive because some chips have not been produced for a long time and are rare, especially those from Signetics.

Incidentally, the Apple-1 was not Wozniak's first computer, he had already developed the "Cream Soda Machine" together with his friend William "Bill" Fernandez in 1971, a simple TTL computer whose processor was made up of individual TTL chips. The processor was made up of individual TTL chips because there were no microprocessors at the time. The Intel 4004 was not on the market until November 1971.

COMPUTER WITH TERMINAL

The Apple-1 has a similar structure to the computers mentioned above, i.e. the part with the processor works completely independently of the part for image output - in principle like a computer with a connected TTY terminal. However, the special innovation of the Apple-1 was that both parts were integrated on a common mainboard. This made it an all-in-one system, so to speak! This led to significant cost savings because no separate terminal had to be purchased. The interface was also not serial; a whole byte was passed to the image output, which was picked up by it as soon as it was ready - then the processor could pass the next byte. However, this did not make it much faster. A normal terminal at that time had a speed of 10-30 characters per second, the Apple-1 achieved 60, i.e. one per frame flyback at a refresh rate of 60 Hz.

Another improvement was the integrated ROM; the Altair only had RAM in its basic configuration so that the user first had to laboriously enter a basic program via switches on the front panel.

THE HARDWARE

The mainboard of the Apple-1 is built like a chessboard, all chips are placed in such a way that their position can be indicated with a letter and a number, as in chess, which is also done in the manual and makes it much easier to locate the chips. The processor section is at the bottom and the terminal section with the video output is at the top.

The processor section does not contain any major surprises, apart from CPU, RAM and ROM, it contains a PIA chip (Peripheral I/O Adapter) to read the keyboard and send characters to the terminal section.

THE TERMINAL PART

The terminal part has some similarities to the "TV Typewriter" (1973) by Don Lancaster, but according to Steve Wozniak it was an independent development - perhaps an obvious design at the time? Nevertheless, I would like to briefly mention the device here - it was intended as an inexpensive terminal for at home use with output to the existing television. You could compare it to a typewriter that writes not on paper but on the TV screen, without any further intelligence such as a CPU.

Der IMSAI 8080, from Rama, Wikimedia Commons, Cc-by-sa-2.0-fr, CC BY-SA 2.0 fr.
https://commons.wikimedia.org/w/index.php?curid=17541572

Now to the curious image structure mentioned at the beginning. Semiconductor memory was still extremely expensive back then. The first static RAM chip (Intel 3101) came onto the market in 1969, the first dynamic (Intel 1103) in 1970. Static memory is more complex in terms of chip construction and therefore more expensive, whereas dynamic memory requires more external circuitry for memory refresh to ensure that the memory content is not lost. For cost reasons, DRAM was therefore used in the Apple-1 and only 4 KB of it. Instead of RAM chips (i.e. with random access), 1024-bit long shift registers were used for the image memory - this cost less, but came with quite a few limitations, such as the slow speed of text output and the fact that you could not freely choose the position for character output on the display! Whereas with a RAM you can address each memory cell to change it, the shift register is like a conveyor belt with only a single input; you have to shift through the entire memory once to replace the data you have entered with new data! The display therefore only knows one direction for character output: forwards and downwards, i.e. if you made a typing mistake, you could not delete the wrong character on the screen - if you pressed the backspace key (delete backwards), an underscore "_" appeared on the screen instead. Internally, the computer then considered another character to the left of each underscore to be deleted! An interesting solution for this technical limitation!

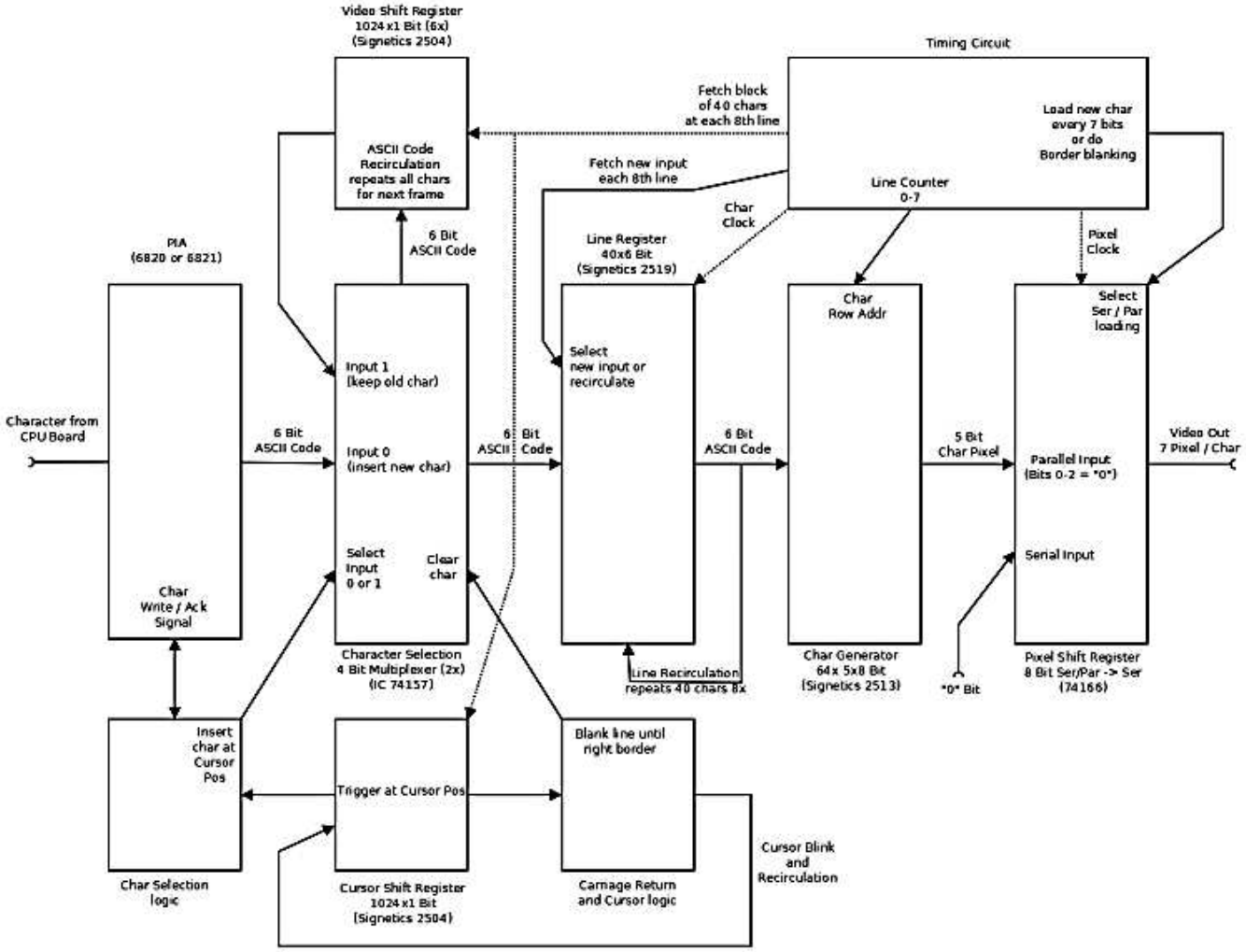
SEQUENCE OF THE IMAGE OUTPUT

I have drawn a diagram of the image output through the terminal part (see picture). It is somewhat simplified and does not show everything exactly, because the circuitry is extremely complicated and would go beyond the scope here.

The computer part can only transfer a single character at a time to the terminal part via the PIA chip and must then wait with the next character until the last one has been picked up by the terminal. This happens 60 times per second (60 Hz NTSC playback in the USA).

The "Video Shift Register" with a size of 1024x6 bits, actually six shift registers with 1024x1 bits each, is in principle the complete picture memory (frame), it contains all printable characters that can currently be seen on the display, i.e. no control characters with a code < 32, whereby only the 6-bit ASCII code of each character

Der Apple-1, from: Achim Baqué - https://www.apple1registry.com/en/press.html, CC BY-SA 4.0,
https://commons.wikimedia.org/w/index.php?curid=109364693



is stored to save space. Each bit that falls out "at the back" when shifting is normally reinserted at the front as in a loop ("recirculation"). There is also the "cursor shift register", which is 1024x1 bits in size and marks the current position of the input cursor on the display. Both are shifted forward in the same cycle during image output. At the moment the marker of the cursor shift register is pushed out at the end, a new character (if available) can be inserted into the video shift register by the computer and the cursor position updated.

The only control character that can be used is CR (Carriage Return, Code 13), when this is sent by the computer (or when the cursor position is reached), the rest of the line on the display is automatically filled with spaces. To output a complete frame, the video shift register and the cursor shift register are completely shifted through once (i.e. 1024 bits).

The characters in the ASCII code must be converted into pixels in 7x8 format for output on the display. This is done by the "Char Generator", where the complete character set of 64 characters is stored as a matrix and can be called up via its code and the pixel line (0-7). Because each character on the screen consists of 8 pixel lines, the ASCII code of each character of the text line must be passed eight times to the Char Generator (together with the pixel line number). This is not possible with the video shift register alone because it cannot be rewound. The solution is another shift register, the "Line Register". It has space for 40 characters with 6 bits each - exactly one complete line of text on the screen! At the beginning of a new line of text, 40 characters are copied from the video shift register to the line register. The line register also has a recirculation, i.e. a loop to insert the bits that fall out at the end back in at the front. It does this exactly 8 times for one line of text in order to be able to pass all 40 stored character codes eight times to the char generator for the 8 pixel lines of each character - meanwhile the video shift register stands still, it is only used again in the next line of text!

Only 5 bits per pixel line come out of the char generator, but 7 pixels are displayed horizontally on the screen (for 2 pixels distance to the next character). This is solved by always setting the remaining bits in the "pixel shift register" (with a size of 8x1 bits) to "0". Compared to the other shift registers, the pixel shift register has the advantage that the data can be loaded either serially (i.e. bit by bit) or in parallel (i.e. all 8 bits at once). However, they are still only shifted out bit by bit. The pixel shift register is 8 bits in size, but after 7 bits have been shifted out for the video output, the next character is already loaded. In the area of the border, horizontal flyback or frame flyback, in which no text can or should be displayed, the pixel shift register is switched to the serial input and "0" bits are constantly fed into this, so that the pixels on the screen remain black at this point. The bit at the output of the pixel shift register goes into the analog part of the circuit and is not fed back in. The analog part converts the information "0" or "1" into a black or white pixel on the display (plus other signals such as Hsync and Vsync, which are required for the composite video signal).

FURTHER LINKS

I hope I have been able to explain how the Apple-1 works in a reasonably understandable and error-free way! I was definitely surprised when I took a closer look at it. You can see that today's computers were not created overnight, but rather in small steps. If you would like to learn more about the Apple-1, I can recommend the following websites:

German:

`http://neil.franklin.ch/Info_Texts/Apple_1_Hardware_und_Software.html`

English:

`https://www.sbprojects.net/projects/apple1/terminal.php`

`https://github.com/The8BitEnthusiast/apple-1-video-terminal-on-fpga`

THE »DRAGON 32«

BY JOACHIM GEUPEL

"Dragon Data Ltd." was a Welsh technology company whose history only lasted from 1982 to 1984, when it could no longer withstand the pressure of competing models such as Sinclair and Acorn and was sold to the Spanish start-up Eurohard S.A..

The company's history is short. Dragon Data Ltd. was originally part of the toy company "Mettoy", actually "Mettoy Playcraft Ltd.", which was founded in 1932 by Philip Ullmann and Arthur Katz. "Mettoy (Metal Toy)" produced a variety of lithographed metal wind-up toys such as the toy cars in the "Corgi Toys" range. "Mettoy" also went bankrupt in 1984.

The history of Mettoy is also interesting, but doesn't really belong in the magazine. It is presented on the website "The Brighton Toy and Model Museum",

`https://www.brightontoymuseum.co.uk/index/Category:Mettoy`

Due to economic problems, "Mettoy" separated the "Dragon Data" part of the company from the parent company in the hope that "Dragon Data" could survive independently. However, the company lost market share due to technical problems in production and the failure to adapt the computers to the then current technical standard. Although new computer models were developed, they never made it past the prototype stage, such as the Commodore C65.

"The DRAGON Archive" offers an almost complete overview of everything there is to know about Dragon Data and Dragon computers, as well as a whole host of material such as books, magazines and software.

The link is

`https://archive.worldofdragon.org/index.php?title=Main_Page`

Have fun browsing. It's well worth a look!

The "Dragon 32", like its successor "Dragon 64", is based on the 6809 processor from Motorola. The two computers differ in their memory configuration, but are otherwise identical. As its name suggests, the main memory of the "Dragon 32" is 32kB. It was developed in 1982 by the Welsh manufacturer "Dragon Data Ltd." as a competitor to the "ZX Spectrum" from Sinclair and the "Acorn BBC Micro".

The "Dragon 32" is very similar to the "Tandy Color Computer", which led to patent disputes. It can also be assumed that "Dragon Data" copied from there...

The computer is equipped with the extended version of "Microsoft Basic", the "Microsoft Color Basic". This makes it easier to use the extended graphics functions.

The 6847-VCD graphics processor from Motorola is responsible for the graphics output. It can display up to eight colors. The 6847-VCD actually provides eight different full graphics modes. However, only five of these are supported by the basic system.

A maximum of 256 x 192 pixels can be displayed. At the highest resolution, two colors are displayed, selectable from two predefined color palettes; at lower resolutions, up to four colors can be selected, also from two predefined color groups.

In semi-graphic mode, all eight available colors can be displayed simultaneously. At the time of writing this page, it is not yet clear to me what is meant by semi-graphic mode.

The text display corresponds to the usual character density of the 80s with 16 lines of 32 characters each.

The "Dragon 32" is reasonably well equipped with interfaces. It has two joystick ports to which no standard joysticks fit. A Centronics port enables printing with a normal Centronics printer, provided that an adapter is made from the 20-pin socket to the Centronics cable. The monitor connection offers an FBAS video signal and a sound output via a 5-pin DIN socket. Of course,

the RF output for connection to a television is also included. A cassette recorder is connected via a 5-pin DIN connection. Additional hardware can be connected to the 40-pin expansion port, although this is relatively rare.

All in all, the Dragon 32 is a beautiful device that corresponds exactly to the state of the art of the 80s. Alongside the Sinclair ZX Spectrum and the Atari 600 XL, it was one of the best-selling home computers in England for a while.

COMPACT DATA

Year of release:	England 1981, FRG 1982
Manufacturer:	Dragon Data Ltd, Tano Microcomputer Products Corp, Eurohard S.A.
Processor:	Motorola 6809E, 0.894 MHz clock frequency
RAM:	32kB
ROM:	16 kB
Text:	32 characters x 17 lines
Graphics:	Motorola MC6847 video chip, 256 x 192 pixels, 32 characters x 17 lines, max. 8 colors
Sound:	4 voices mono, 5 octaves
Keyboard:	53 keys, QWERTY
Data carrier:	external cassette recorder
Connections:	Power supply, monitor, RF output, joystick 1&2, tape, PIO (Centronics), module port

SOURCES:

Wikipedia »Dragon 32, Dragon 64«
»The DRAGON Archive«
»www.Joggysite.de«

GAMES 2022

BY THOMAS EBERLE

Hello again. Unfortunately, Ellvis has fallen seriously ill and his life has changed a lot as a result. He will certainly return, but for now there are other priorities. That's why I've taken over the game reviews again after they were omitted in the last issue.

The aim is to give you an overview of the best newly released non-commercial programs for the ZX Spectrum. The selection is, of course, subjective, and innovation also plays a role, because I don't feel like looking at the 2000th version of "Jet-Set-Willy". Fortunately, there is no shortage of software, so much so that we have not yet managed to reach the goal and get to software from at least the same year as this issue. We were last at 2021 and are now looking at what 2022 brought us.

»LOXLEY«

Spectrum Software also comes from Argentina, and not for the first time. This time, *World XXI Soft Inc* (aka *Ariel Ruiz*) presents us with a new game about the hero in tights, the avenger of the disinherited and the one who takes from the rich and gives to the poor: *Robin Hood*.

After an elaborate introduction, which seems to have taken quite a few graphics from the well-known film with Kevin Costner, the action adventure gets underway. In the role of Robin Hood, you can first familiarize yourself with the controls, the sword and the bow, and then get to grips with the evil sheriff. Running, climbing and jumping, Robin first fights his way through the forest and later through villages and towns. Fighting with bow and arrow is relatively boring, sword fights are more interesting. By practicing and fighting, Robin earns points, which he can then use to improve his skills. It is also important to tackle the challenges in the right order according to the skills you have acquired.

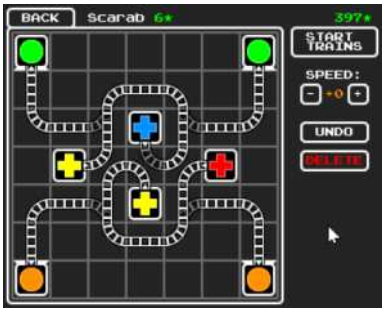
The game impresses with its elaborate graphics and sound. When you mount your horse, it neighs and you can also hear the sound of iron during swordplay. Such samples have rarely been seen in a game before and not with this frequency.

The game promises a lot of entertainment, unfortunately without the chance to save. If you still want to try it, you can download the game here. If you like it, you are free to donate any amount to the programmer:

https://worldxxisoft.itch.io/loxley

»TRAINYARD EXPRESS« (SPECTRUM NEXT)

DAVID CRESPO TASCON



Many games for the *Spectrum NEXT* are commercial releases and, in my opinion, often not cheap. Not so this little logic game, which you can download for free. If you don't have a *Next*, we recommend the *Cspect emulator*, which is also included on the homepage of this game.

You have to connect two points using tracks. What sounds simple is only so at the beginning. The more

stations you add, the more difficult it is. It is also impossible to prevent the tracks from overlapping, but with clever timing you can at least prevent the trains from crashing into each other.

An entertaining game that can also be played with the mouse. Tricky, but not too difficult, easy to understand and good to play. If you're missing something like this in your software collection, especially for the *NEXT*, you'll be well served here.

Download at:

https://davidprograma.itch.io/trainyard-express

»CANNIBAL ISLAND 2«
PAVERO SOFTWARE

A president who has journalists shot? That's unacceptable, so he is unceremoniously deposed and sent to a desert island. But even such rulers have their fans and so the last brave supporter sets out to save the president from cannibals on the island.

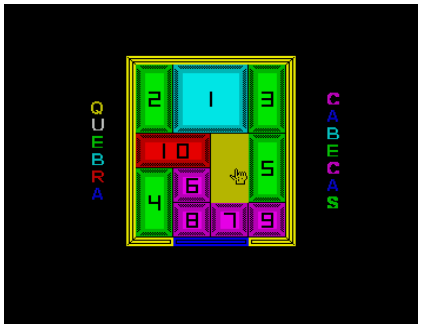
At first I wanted to press the reset button, the game looks like it's from 1982. It's not up to date in terms of graphics and animation, but it's a tricky and surprising game that I would classify as a kind of strategy game rather than a platformer. In fact, the (anti-)hero of the game can't jump at all, at least not forwards, only straight up. In order to overcome obstacles, he has to climb up, stretch a rope and then move over the obstacle on it. In general, you should always avoid walking on the ground, as the cannibals have set traps everywhere. Like the movie »*Edge of tomorrow*«, it's called »*Live.Die.Repeat*«.

The game is certainly a bit out of date, but we're all a bit retro and whether it's 40 years earlier or later... it's still a game and it's fun. In this case, it really doesn't cost anything to watch.

Get it from:

https://spectrumcomputing.co.uk/forum

»QUEBRA-CABEÇAS«
JORGE SOARES

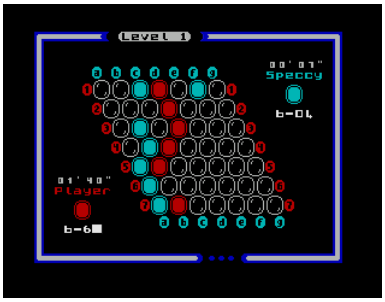


Who remembers the little sliding games that were often available for children? The colours, numbers or symbols are in a fixed frame and you can only move one piece at a time to put it in a certain order. »*Quebra-Cabeças*« is exactly the same, but on the *Speccy*. The aim of the game is to move the square with the number »1« at the bottom through the exit. Sounds easy...but it's not. My head was spinning after a short time. Surely someone else will find it easier, and once you get the hang of it, it may be easy and the fun is gone. But if you want to be confronted with a difficult puzzle first, you're welcome to take a look at it. As is often the case with puzzle games, the graphics are very simple but adequate. There is no sound, so nothing disturbs your concentration.

Have fun puzzling:

https://spectrumcomputing.co.uk/entry/39103/ZX-Spectrum/Quebra-Cabe%C3%A7as

»HEX 2«
ANTONIO LUQUE

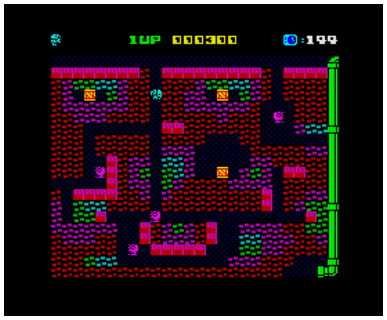


»*Hex 2*« is a board game that is marketed in its best-known version by Parker. It is a slightly improved version of »*Hex 1*«, which we had not yet looked at here, so let's catch up with the successor.

The playing field consists of 7 x 7 squares and the opposite edges of each square are the same colour for each player. The aim is to occupy the squares in the middle with your colour so that there is a connection with the two edges. The game is played against the computer and even after 40 years, the Spectrum is still ahead of us in terms of thinking, so it will be difficult to beat it. I didn't succeed in the test. What about you? Try it out:

https://spectrumcomputing.co.uk/entry/38671/ZX-Spectrum/Hex_2

»DIG DUG DOUGH«
GABRIELE AMORE



The name »*Gabriele Amore*« has long been synonymous with colourful game ideas. But this time the idea is not so new.

»*Dig Dug*« was already available in 1982 on »*Namco*« *gaming machines* and the »Atari« game console. However, the idea is not new, but it is still a very modern and colourful implementation.

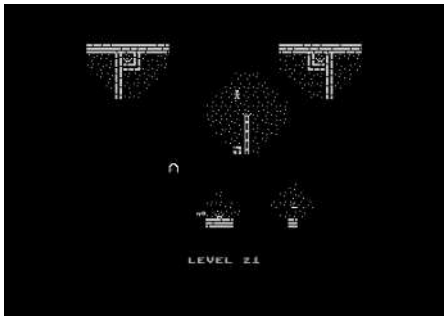
In »*Dig Dug Dough*« you have to push an explosive device into a pipe. Firstly, the way there has not yet been made and secondly, there are other figures on the playing field. The first thing you have to do to avoid disturbing them is to remove them. How do you do that? You pump them up! Yes, that makes them bigger at first, but then they also burst and the danger is eliminated.

You also play against a time limit, so go ahead, pump up the monster, clear the way and push in the explosive charge before the time runs out. It's really not easy and the time limit is quite tight.

Gabriele has once again made a beautiful realization using the normal Spectrum possibilities. The animations are finely drawn, the colours very bright and everything a bit comic book style (including the »boom« when bursting). There is also a nice menu sound, but in the game the monotonous motor noise of the robot you are controlling is a bit annoying. Of course, there have already been several implementations of this principle, but if you want to see a particularly colourful version, download it here:

https://spectrumcomputing.co.uk/entry/39075/ZX-Spectrum/Dig_Dug_Doug

»TENEBRA«
HAPLO



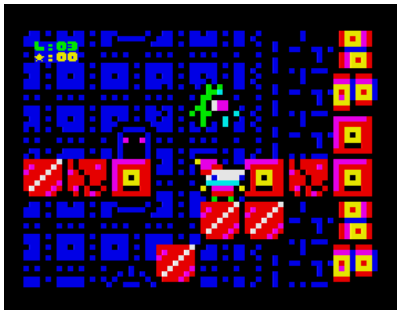
There are plenty of puzzle adventures out there, but what if you set the adventure in a dark room? Only a few corners are illuminated and you can only move around in the illuminated area (probably prescribed by the employers' liability insurance association). That definitely makes things more exciting. *»Tenebra«* has already won an award for the best puzzle game of 2022 from *»Planeta Sinclair«* and the *»LOAD ZX Spectrum museum«*, which are pretty much the only official institutions that can award prizes. But what makes the whole thing a puzzle game? The light, of course. Because you can create light in the form of a torch, which only illuminates a limited area. Then again, you can't take the torch with you everywhere, some passages are so narrow that you can only pass through them without a torch.

The graphics are very simple and monochrome, but at night all cats are gray. Despite these simple graphics, it is an atmospheric adventure in the dark and offers all kinds of surprises.

The game is basically free, but you can also support the programmer by making a voluntary payment. Download for free or pay at:

https://h4plo.itch.io/tenebra

»RINGO«
DENIS GRACHEV (RUSSIA)
OLEG NIKTIN (RUSSIA)
IVAN SELEZNEV



The best usually comes at the end, and 2022 is no exception. »Ringo« was first distributed by *»ZX-Online«*, thanks to the fact that we are only able to present the games so late, we can at least now announce that it has now been released and can be downloaded free of charge.

First of all, we recommend using a joystick for this game, preferably with an extension cable. The graphics are colourful and use a new graphics mode that can display about twice as many colours as usual, but in a lower resolution. The result is still impressive, but looks best with the above-mentioned distance from the screen.

About the game: You have to find a key and open the door...done. It's obvious that this isn't made any easier by the various aliens. But what's new about this game? First of all, it's beautifully animated, very fast and action-packed. Due to the lower graphics resolution, you only ever see a small section of the game and can easily run into an opponent, which makes the whole thing more of a strategy game, and it's the strategy that counts. The hero »Ringo« can't jump very high, but he can build blocks, climb on them and destroy them again. For example, you have to build a bridge to get to the key or build a wall quickly to prevent the alien from reaching you. Each level offers a different challenge and there is often not just one solution. The great freedom to build blocks anywhere leaves many possible solutions open. Another pleasant feature is that you are neither playing against the clock nor running out of lives, you just have to find the key at some point and bring it to the door.

As already mentioned, the graphics are unique. Despite the somewhat blocky design, it's as if we didn't have a Spectrum in front of us. In terms of sound, there's also a lot to hear, absolutely fitting sounds and several of them in the levels. Unfortunately, I can't report any longer now, I still have a few levels to complete... You can't save and there are no level codes either.

Try it yourself, now for free:

https://retrosouls.itch.io/ringo

THE »LAST NINJA« STORY

BY THOMAS EBERLE

When talking about the best games ever released for 8-bit computers, it's hard to get past The *»Last Ninja«*. *C64* users in particular rave about this title. But is the *C64* version actually the best? Here's the story behind this exciting action/adventure title.

The *»Last Ninja«* series consists of three titles and a remix. It's about a (who would have thought it) ninja who has to solve all kinds of challenges by fighting and solving puzzles. The first part was first released on the C64, later also on other 8-bit systems such as *Apple 2*, *BBC*, *Amstrad CPC* and even on the *Archimedes* (1992). A *Spectrum* version was also planned. Programmer *Mevlut Dinc* recently provided information about this in the Spectrum newsletter *»On the Spectrum«:* System 3 asked him if he wanted to finish »The Last Ninja« on the Spectrum. There was already a pre-release version, but it was far from finished. Mevlut found it impossible to finish someone else's code and what he saw did not inspire him much. As the second part of the series was already being planned, he simply offered to do the second part straight away. Mevlut thus became the programmer of one of the best Spectrum games of all time and, in his opinion, the best *Last Ninja* version.

»The Last Ninja 2 - Back with a vengeance« was released in 1988 and was the first time the ninja was seen on the Spectrum. The game series uses an isometric 3D view that takes some getting used to, especially when it comes to the controls. Once you've got used to it, however, there are a multitude of ways to control the character. You have 15 types of movement just for fighting (armed/unarmed), the ninja can climb, jump in two ways, pick things up, use weapons and also throw. Despite many fighting moves, it is not a pure fighting game, on the contrary. You should always avoid a fight if possible, as the opponents will get up again after a while anyway.

The detailed graphics are particularly striking here. Although the Spectrum version is monochrome, it is more detailed in this respect than other 8-bit versions. There is no sound in the game and the title melody... well, it rather scared me. This game was released again for all 8-Bitters mentioned in *»Last Ninja«,* but also on *Amiga* and *Atari ST*, but the 16-Bit version was obviously not enthusiastic (Amiga Joker 44%).

The next release was *»Ninja Remix«* in 1990. This remix was actually supposed to contain some extras such as an intro for the 8-bit versions. The 16-bit versions, however, are the complete conversion of *»Last Ninja 1«,* but the *Amiga/Atari ST* community was not very enthusiastic about this one either. The *Spectrum* version contains a short intro, but no other special changes. You can see that some work has been done on the border, but not necessarily improved. The playing field shows exactly the same game as *»Last Ninja 2«.* In the *C64* and possibly the *Amstrad version*, the sound has also been improved, while the Spectrum version still has the annoying menu song as the only piece of music.

It should be emphasized that *»Last Ninja 2 / Ninja Remix«* is a 48k game, although there were many titles released as 128k games in 1988. Hence the frightening sound. The levels are reloaded; apart from the cassette, only *+3* users had the option of using a faster mass storage device. The *Amstrad* and *C64* versions were also released on cassette and floppy disk.

»Last Ninja 2« was released as a large box. In addition to the data carrier, the box contained a card and a large manual in English, French and German.

»Ninja Remix« is a much smaller cardboard box and also without a card. The manual is also much smaller, but has almost the same content. Funnily enough, however, the loading instructions for the Spectrum have been omitted from the German version.

The one-time appearance of *»Last Ninja 2«* on the Spectrum was already over. *»Last Ninja 3«* was only released for *C64*, *Amiga* and *Atari ST* in 1990.

Mevlut Dinc (Mev Dinc for short) left System 3 and founded *Vivid Software*. In 1990, System 3 released the hit *»Vendetta«* for the *Spectrum*, a game with similar graphical features to *»Last Ninja«,* but not created by *M*ev *Dinc*.

In 1992, *»Last Ninja 2«* was released once again as a budget title by *Hit Squad*.

Last guess: I found a file with *»In Game«* AY music on the internet. But my original *»Ninja Remix«* doesn't have it. My suspicion is that this is part of the *+3* version, but I can't confirm or deny this at the moment.

It remains a game with six difficult levels that I would probably never complete without Poke. But it's always worth giving it a try.

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GAME REVIEW: »TOKIMAL«

PAT MORITA TEAM 2021

BY JUNGSI

Besides Melkhior's Mansion, albeit in a different field, »Tokimal«is perhaps the game that the community has been waiting for the longest. Expectations were very high, and the least I can say is that it lived up to expectations, even if it's not a direct port of the arcade game.

»Tokimal«, or »Toki« - the game it is based on is, along with »Mire Mare«, one of the most famous games of the Spectrum community, although, like the second one, it was never released. However, the hype surrounding the game, which was to be released by Ocean Software in 1991, was huge. Several models of what could have been »Toki« were shown in magazines. However, the Spectrum had already reached the end of its first commercial life cycle and the game was shelved, much to the regret of the community. Some 30 years later, there is finally an opportunity to play it, even if it is different from what was planned.

»Tokimal« was developed with the MK1 engine, leaving out the unrealistic jumps and the annoying music. This means that the aspects that are negative about the engine have not been taken into account. Of course, the versatility of MK1 is great, allowing for different types of scenery and even different action mechanics depending on the level or stage.

STORY

It's not easy being the cousin of a famous monkey. We are always compared to him in everything we do. Now our friend wants to test us and has decided to get kidnapped by the most predatory of all the monkeys in Jujuland: Monolete. Of course we will not tolerate this, so we have accepted the challenge and will now fight any creatures that dare to cross our path. We will then try to get our friend back so that she sees how good we are and never calls us again... Tokimal...

After loading the file, the player is confronted with two game modes. The first is the arcade mode, in which five levels have to be mastered straight away, each with a big End boss at the end. However, it is much more interesting to choose the advanced mode, as in addition to the five levels that exist in arcade mode, a new secret stage is introduced in each of the levels. These additional screens are hidden in the middle of the scenes and require utmost attention so that they do not disappear. Otherwise, although the end of the game can be reached, it will not be possible to acquire the idols that will appease the girlfriend enough for Tokimal to win her back.

The idols are not free and come at a price. To get them, you have to use the coins that are collected every time an enemy is shot down. This then leaves behind a Bitcoin, which is available for a few seconds. Once 50 units have been collected, these are automatically exchanged for an additional life, which is then required to purchase the idol.

The fact that there are only five levels is somewhat deceptive. The levels are not only long, but with the secret phases and the big End bosses they also offer fun for many, many hours. While most of the enemies can be eliminated directly or bypassed, the big bosses require some special tricks to kill them.

Each level has a different theme and different enemies that gradually increase in difficulty. And each one has a very distinctive name that hints at the obstacles the player will encounter:

Labyrinth of rocks
Lake Poseidon
Caves of fire
Ice Ice Baby
Golden Ruins

CONCLUSION

All levels have beautiful landscapes, e.g. one is reminiscent of the famous *Vanilla Ice* song: *Ice Ice Ice Baby*. At one point, when entering the secret stage, the friendly monkey leans on a skateboard to get to the idol faster.

Of course, power-ups are also a must, even if they don't appear in large numbers or very often. What's more, with the exception of the extra life, all the others have a very limited time horizon, so you hardly notice that you have them in your possession. Perhaps the most useful is the triple shot, which can be used to destroy enemies that are in awkward places.

As for the scenarios, they are simply divine and one of the strongest points of this game. They are the work of Jarlaxe and make it clear why *»Tokimal«* took almost two years to complete.

It's easy to see that the team paid attention to every detail and didn't neglect any aspect. The game is very close to perfection and it was a pleasure.....

This game is available directly from the *Pat Morita Team* website at a price of 2.99 euros.

Download at:

https://patmorita.itch.io/tokimal

GAME REVIEW: »VRADARK'S REVENGE«

SANCHEZ CREW (2022)

BY JUNGSI

SYSTEM: ZX SPECTRUM NEXT

»Vradrak's Revenge« is a new game from the *Sanchez Crew*, who are known for their high-quality ZX *Spectrum* games such as *Delta's Shadow*, *Aliens*: *Neoplasma* and others

The game features colourful graphics, multi-channel music and sampled sound effects that are more reminiscent of an *Amiga 500* than a *Spectrum*. The *Next* is still an 8-bit Z80-based computer that has been slightly boosted and improved, but it is still a *ZX Spectrum*.

The game has a linear story that carries over the narrative from »*Vradark's Sphere*«, but this time the genre is different - now it's not a roguelike, but an action RPG game with multiple levels, each inhabited by a different demon. The player takes on the role of a wizard whose goal is to find the demon in each level, destroying all sorts of magical evil things and improving his abilities in the process, and to destroy the main demon in the final battle. By repeating this action in each subsequent level, the player will eventually reach the *Vradark* - the main villain.

By killing evil spirits, the player also earns money to spend in the magic stores available in each level to upgrade the character.

If the player character runs out of health points, they die and are resurrected at the start of the current level, losing equipment and money. However, if the player dies in battle against one of the bosses, they have the chance to fight the boss again. To do so, however, they must win a special mini-game.

The controls are unusual for a Sinclair game. The hero is moved with *WASD* and the mouse is used to aim at the enemies - *PS/2* mouse required on the *Spectrum*!

The game is very dynamic and colourful. The musician *n1k-o* has written more than a dozen 9-channel soundtracks (3 x AY), and the artist ER has created several different locations and many colourful animated characters.

By the way, there is also a version for PC on Steam.

CONCLUSION

I think what the *Sanchez Crew* has presented with »*Vradark's Revenge*« is great. The game is on a par with 16-bit computers and it plays brilliantly. However, some Spectrum fans refuse to consider it a *Spectrum* game because it doesn't evoke retro feelings for them.

I think the *»Spectrum NEXT«* is a successor to what it could have been if Sinclair hadn't gone under and so I can imagine that the games could be like that.

The game is available from 7.00 euros on the *ZX Online* website:

https://zxonline.net/game/vradarks-revenge/

ADVENTURE SOLUTION »THE NAMELESS ONE«

BY HARALD LACK

1999 Dennis Francombe (Adventure Probe Software)
Hardware used: Original ZX Spectrum 48K

Hello adventure friends!

Today's adventure game retrospective takes us back to 1999, when Dennis Francombe wrote the program "The Nameless One" with the help of the Professional Adventure Writer (PAW), which was then published by Adventure Probe Software.

It is thematically set in the 12th/13th century in the area of the legends surrounding the person of King Arthur. This is certainly a topic that you can always publish something about. There are also plenty of films that have taken up the events at Camelot's court. It is a two-part adventure game that I would like to present to you in full today. For the sake of clarity, however, I'll be discussing both parts separately. That way, each of you can join in where it makes sense for you. But more on that later.

Now the story of Camelot and King Arthur is certainly well known to most people, but I would still like to briefly explain the story behind the program so that we all have the same level of knowledge for this adventure.

"It all began one evening when King Arthur was once again holding court at Camelot. After the sumptuous feast, as the wine flowed freely and the air was filled with the voices of the knights proclaiming their glories, the hall doors suddenly slammed open with a thunderous sound and a young man entered. He was such a youthful apparition that the voices all fell silent as soon as they saw him. Into this eerie, tense silence, the youth raised his voice and said for all to hear:

"My Lord, I have come here from a very distant land, from which my mother sends you her greetings, as well as this ring and this scroll. I have no name until you, My Lord, will give me one and nothing with me to give you as security."

He handed the scroll and the ring to Arthur, who looked at the ring long and hard. Gradually the color drained from his face after reading the scroll and he said something quietly to Guenever, his queen. Then Arthur spoke:

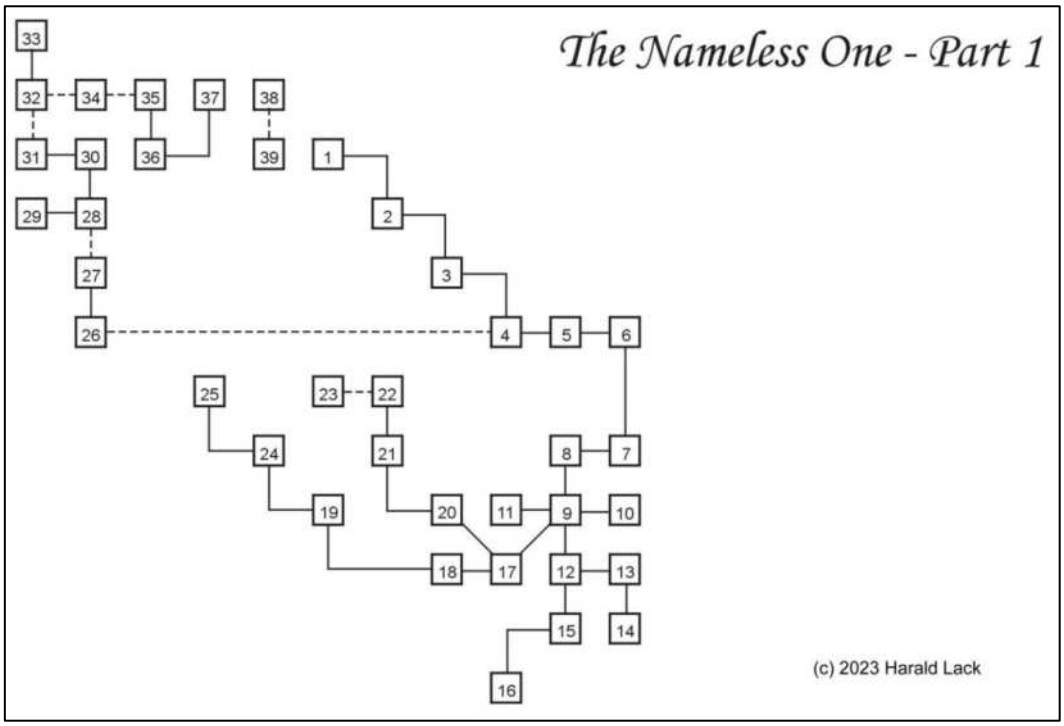
"I will arm you in my favor, sir, but you must first prove yourselves worthy and prove yourselves in battle before I will give you a name. Make your way to the land of Senaudon, where the Princess Blonde Esmeree is trapped under a magical spell. Bring her back to Camelot and what you lack shall be yours. This is a service I owe your mother".

He gave instructions to his majordomo, Sir Kai, to check on the weapons and then turned back to his queen, who stood by her stricken king. Thus the seeds were sown of the legend that would lead to the break-up of the Round Table and the death of King Arthur. This is one of the legends surrounding the figure of King Arthur. It was written down by Dennis Francombe with the help of John Schofield in the form of this adventure game."

So much for the back story.

Now a few words about the parser. The program understands the normal, known inputs. In each of the two parts, HELP takes you to a few hints and a short list of examples. Another tip: Examine and Search do not always lead to the same result, which of course makes it even more exciting. The program includes a Ramsave/RS and Ramload/RL routine that can be used at any time. It is advisable to make frequent use of this. Of course you can also save to cassette/disk. So much in advance.

1) At a high road
2) At a gorge
3) At a narrow pass / pair of gauntlets
4) At dragonsford / cave
5) At the river path / rag
6) At watermead
7) At the common / young swineherd, pit of tar
8) At the duckpond / ducks, reeds, paddle
9) In the village
10) At the cottage interior / old peasant, some food
11) At the forge / anvil, piece of iron, heavy hammer
12) At the village end
13) At the crone's cottage / amulet
14) In crone's kitchen / cauldron, cupboard, jester's bauble
15) At the inn / ancient crone, small coin, (closed) trapdoor
16) In the cellar / rubbish, cup
17) At the forest track / branch
18) At the rising track
19) At a rocky ascent / long rope
20) At a forest path
21) Up a ledge
22) At the end of the ledge
23) In hermit's cave / Hermit, stream
24) At the rocky track
25) At watcher's point / large rock
26) At the northern pastures
27) At escavalon / coracle
28) Aboard the coracle
29) The islet / coracle, bushes, gold fillet
30) The inlet
31) At the banier / moat monster
32) Beside the moat / ferryman Sabre
33) At the Birch Grove / haughty Rhianon
34) Aboard the ferry
35) At the chateau landing
36) At the courtyard
37) In the bedroom / temptress Elaine, bed
38) At the chateau green
39) At the bridge



That's it, the locations of the first part. Now let's move on to the walkthroughs for this adventure. Of course, from here on, everyone can also try their hand.

Inventory, X armour, X sword, X shield, X horse, D, D, X scree, dismount, dig, get gauntlets, X gauntlets, wear gauntlets (too old and stiff to wear them), mount, D, X cave, cross ford (we are driven back by flames) E, dismount, search path, get rag, X rag, mount, E, S, X swineherd, greet swineherd, W, S, dismount, E, X peasant (just cooking), greet peasant (waiting for his son), W, N, E, tell swineherd about meal (he immediately runs towards the village), W, S, E, X swineherd, X peasant, talk to peasant (the place is deserted except for him and a wise old woman - it's the dragon from the fjord's fault. He sends his son back to the pigs and puts some food on the table for us), X peasant, ask peasant about woman (he suspects you are at the inn - he trolls off), get food, X food, eat food (maybe not after all), W, drop all, W, X anvil, lift anvil (only works if we have nothing on us - we find a coin), search forge/rubbish (there's a hammer), get all, X iron (a kind of chisel), X hammer, E, S, E, S, X cauldron, X cupboard (we take out a strange object), inventory (we now also have a jester's cap), X bauble, N, W, S (after we asked the farmer about her earlier, there is now an old woman here), X crone, greet crone (after we have killed the dragon later, we will meet her again in her hut), X fumiture (we find a coin and pick it up), X coin, X bar, X look behind bar (there's a trapdoor), X trapdoor, open trapdoor (of course you can't), prise trapdoor (you need an iron object to open it), X trapdoor, D, search rubbish (we find a cup), get cup, X cup, U, close trapdoor (not really that important but we are neat), N, N, N, E, give bauble (the swineherd shows us a pit of tar), X swineherd, talk to swineherd, X tar/pit (melted), W, X ducks, X reeds (we discover a paddle and take it), X paddle, S, drop all except cup, remove armour, drop armour, get gauntlets and food, SW, X undergrowth/vegetation, draw sword, chop undergrowth (we discover a path and chop off a branch), get branch, X branch, trim branch (only possible with a sword), X branch (we should heed the hint), sheath sword, NE, drop branch, mount, SW, W (only on horseback), U, dismount, look behind boulders (there is a rope lying around), get rope, mount, D, E, dismount, NW, X cliff (there's a ledge), X ledge (rocks sticking out of it), throw rope (it keeps falling down, can't get a grip), make noose (we make a noose at one end), X rope, throw rope (now it's stuck), U (we can only carry three things; not the armor), N, enter (pretty dark here), leave, drop all, S, D, SE, NE, get rag and branch, wrap rag (around the branch), X branch, N, E, dip branch/rag (into the tar pit now it's a torch), X torch, N, W, W, cross ford (the dragon's fire lights the torch - really handy), E, E, S, W, S, SW, NW, U, N, get all, enter (Hermit's cave), X hermit, greet hermit (is thirsty), X stream, fill cup, give cup/water, talk to hermit (now he's hungry - that guy is annoying), give food (he offers his help), tell hermit about gauntiets/give gauntlets (he makes them like new), X gauntlets, leave, drop torch, X torch, S, D (the rope breaks) SE, NE, get hammer and iron, SW, mount, W, U, U, U, dismount, X rock (hangs over the fjord and has a crevice), insert iron (into the crevice), hit iron (you need the hammer and you have to have the armor on), hit iron (the rock falls apart and blocks the dragon's lair - we put the chisel away), X rock, mount, D, D, D, E, NE (the blacksmith takes his hammer), dismount, get all, wear armor, S, E (the old woman gives us an amulet and a hint), X amulet, wear amulet, W, N, mount, N, E, N, W, W, X cave, cross ford (unfortunately E and W don't help here), N, dismount, X coracle, board coracle (among other things, you absolutely need the paddle). Among other things, you absolutely need the paddle and the armor), W (small island), X bushes, pull bush (we find a golden hairband and take it), X fillet (for an unruly mane), board coracle, N (E and X mound is not important), W, leave (the boat and the paddle are lost), lìsten, N, X Rhianon, greet Rhianon (if we don't have the amulet, the game is over here),give fillet (she goes with a knight), S (here is the ferryman), X sabre, board ferry, pay

sabre/give coin (we cross the moor and come to the castle), S, listen, U, X elaine, X bed, greet elaine, kiss elaine (we take off everything we have with us and a knight enters the room), X knight, get sword and shield, kill knight (only with sword and shield - we decapitate him, but he continues to fight anyway), kill knight (finally - we remember the amulet), get amulet (Rhianon takes it and says a magic formula - Elaine/Astolpho disappear. We get our possessions back and Rhianon gives us her hawk. Some other knight passes by without saying hello), follow knight, S.

And so we have come to the end of the first part. Now let me explain the sequel.

At the end of the first part, we followed an unknown knight to the south as described. And this is where the solution continues seamlessly. But first, as usual, a few notes on the printed map of the second part, its locations and the items found in it:

01) At the bridge
02) At the meadow / horse, knight -> flask, banner
03) In a woodland clearing / altar, shrine, casket
04) At Cambria / hawk
05) At the high valley / crystal
06) At the Cambrian peaks / strange rock, round disc
07) In a surprisingly large cave / tiny key, stalagmite
08) At the city walls
09) At a breach
10) At a city Street
11) At the dunes
12) At the sea / blue wheel
13) At the triumphal way
14) At the palace entrance
15) In the courtyard / studded oak door
16) At the tower entrance
17) At an iron stair / iron bar
18) At the top of the tower / red wheel
19) At a flight of steps
20) In a cellar / barrels, bottles, barrel of brandy, flagstones
21) In a tunnel
22) In the guard chamber
23) At the tunnel end
24) At a island
25) In the temple of Astolpho / altar, corpse, Rhianon, token
26) In the pit / straw, scaly serpent
27) In a short corridor
28) In a cave / small dragon -> Princess Blonde Esmeree

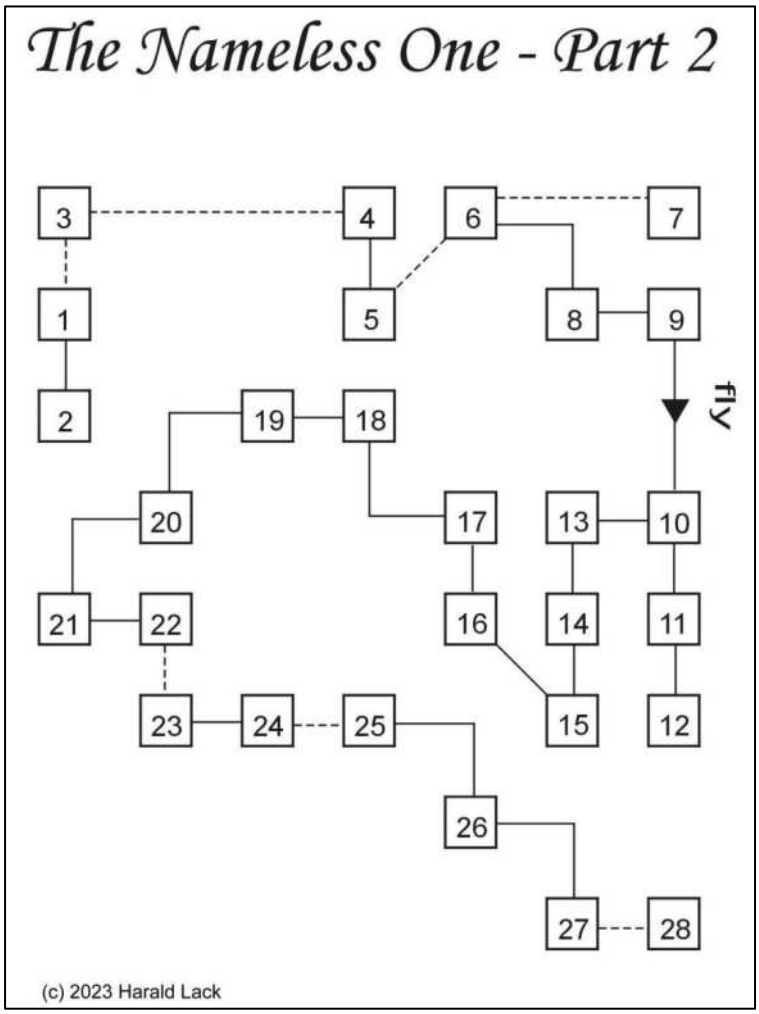
So much for the locations of the plan for the second part of the adventure. But before we finally devote ourselves to solving this second part, a few - I think - quite useful remarks about the program in general.

- If lightning strikes at the shrine and we are not sitting on our horse, it will run away and the game is already over.
- Also, we should never give the guard anything other than the bottle of brandy.

Now it's really time to start solving the second part:

As you should at the beginning, first see what you have with you... that's why:

INVENTORY, X ARMOUR, X SWORD, X SHIELD, X HAWK, X GAUNTLETS, X GIANT, SALORE/SAY SALORE (to get further here), S, X KNIGHT, X HORSE, GREET KNIGHT (he gives us a small bottle and dies), X FLASK (DRINK LIQUID - this is not necessary), X BODY, MOUNT (not yet), BURY BODY (we find a banner), GET BANNER, X BANNER, MOUNT, S (wrong direction), N (we gallop into a clearing - we only have limited time left here), X SHRINE, DISMOUNT, X SHRINE, X ALTAR, X RECESS, X NIGHT/BODY, FEEL IN RECESS (we find a box), GET CASKET, MOUNT, X CASKET, X LID (there is lightning and our horse shies), READ INSCRIPTION, S (no), GET HAWK, LISTEN, S, X WOMEN, X COFFIN (we see Rhianon), GREET WOMEN (Astolpho has trapped Rhianon here), BREAK COFFIN (doesn't work), EMPTY FLASK/POUR LIQUID ON COFFIN (a crystal forms from it), GET CRYSTAL, X CRYSTAL (the hawk becomes restless), READ INSCRIPTION (when we have the crystal with us we see the word "Pegasus"), X HAWK, TALK HAWK, RELEASE HAWK (our horse comes back), MOUNT, FOLLOW HAWK, X BUSHES, DISMOUNT, X BUSHES (we see the entrance to a cave), X CAVE, CLEAR BUSHES (we clear the bushes and find a large, heavy stone behind them),



X ROCK, X CAVE, DIG (we find a disk), GET DISC, X DISC, INSERT/FIT DISC (into the stone to reflect the sunlight), X CAVE, X ROCK, ENTER, X CAVE, X STALAGMITES, SEARCH STALAGMITES (one grows over a still unknown object), X OBJECT, DRAW SWORD, BREAK STALAGMITE (there is a key), SHEATH SWORD, GET KEY, X KEY, LEAVE, UNLOCK CASKET (there is seed in it), X GRAIN, CLOSE CASKET and then MOUNT, D, E, X BREACH, JUMP BREACH (we are thrown off), CLIMB BREACH (no), CLEAR BREACH (no), MOUNT, UNLOCK CASKET, FEED HORSE/GIVE GRAIN (the horse grows wings!), SAY TO HORSE PEGASUS (we fly over the wall and the horse disappears - the box and the key are lost), S, S, X POOLS, SEARCH POOLS (we find a blue wheel and take it), X BLUE WHEEL, N, N, W, S, S, X DOOR, NW, N, X HANDRAIL (we find an iron bar), GET BAR, X BAR, U, X CONTROLS, X RED WHEEL, FIT BLUE WHEEL, X CONTROLS, TURN BOTH WHEELS (we go to the top of the steps), D, X BOTTLES, X BARRELS (there is a barrel of brandy), X BARREL, FILL FLASK/TURN TAP, X FLASK, X FLAGSTONES, Lift/Rise FLAGSTONE (only works with the pole), D, LISTEN, E, X SOLDIER, X DOOR, GREET SOLDIER, GET KEY (doesn't work), GIVE FLASK (now we can get through the door), E, ENTER, X ALTAR (a light shining from a hole in the floor shows us a staircase down), D, X STRAW, MOVE STRAW (there is a trapdoor with a ring), PULL RING (not good), TURN RING (still not good), INSERT BAR IN RING, TURN RING/BAR (Astolpho appears in the form of a large snake), DRAW SWORD (gives us a little more time to survive), X SERPENT, KILL SERPENT, U (follows us), KILL SERPENT, CALL HAWK (he grabs the snake, which turns into an eagle), DROP/PUT CRYSTAL IN HOLE (in the altar - Astolpho dies. Rhianon appears and gives us a sign), X RHIANON, X CORPSE, X TOKEN, WEAR TOKEN, D, D, X DOOR, X SPIKES/WALLS, OPEN DOOR (the walls start to close) - Now we only have three turns left - WEDGE WALLS WITH BANNER/WEDGE BANNER BETWEEN WALLS, OPEN DOOR (we enter the cave with the dragon), X DRAGON, KISS DRAGON (when we have the sign with us he turns into Princess Esmeree), X ESMEREE, GREET ESMEREE (she will now follow us), W, U, U, LEAVE.

The final message is:

Rhianon takes you all back to Camelot to complete the adventure.

In my opinion, a quite playable and interesting adventure. So much for today from my side. See you soon at the same place.

Harald Lack

ADVENTURE CORNER

FROM MIRON SCHMIDT

Hello dear adventure friends!

In this issue of the Adventure Corner I would like to talk briefly about other professions of adventure game authors.

It is well known that in the past, novelists have occasionally been recruited for adventure games, for example Douglas Adams (Hitchhiker's Guide, Bureaucracy) on the more famous side,

Michael Berlyn (Suspended, Tass Times in Tonetown), or Thomas M. Disch (Amnesia). Of course, it is also often the case that another profession was learned first before the first forays into game design, for example Leisure Suit Larry inventor Al Lowe, who was originally a music teacher, microelectronics graduate Carol Shaw, who then became famous with River Raid, or electrical engineer and Pac Man developer Toru Iwatani.

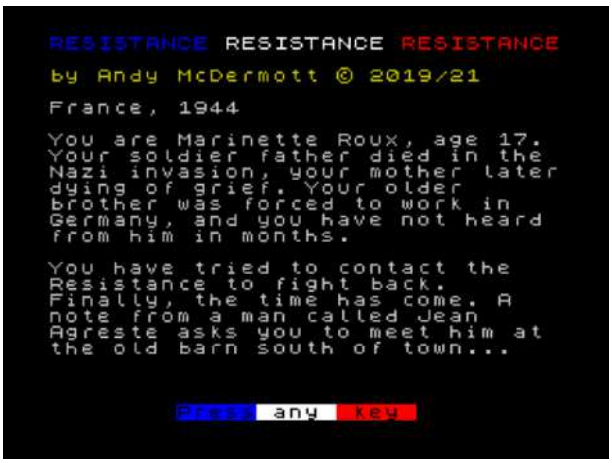
More interesting, however, are the rarer cases in which authors or members of completely different professions write games as a hobby.

Andy McDermott is a good example of this, so I would like to present several of his games. He is best known as a writer, with over 20 novels included in the New York Times bestseller list. Three years ago, a Netflix film adaptation of his book The Hunt for Atlantis was also announced, but nothing has been heard of it since. You can find out more about his work at

http://www.andy-mcdermott.com/.

McDermott has also been writing games for the Spectrum under the Payndz label since 2016. The first were action games written with Arcade Game Designer, but 2019 saw the release of Resistance, the first adventure game, which is now also being reviewed.

»RESISTANCE«
ANDY MCDERMOTT 2019



Although Resistance was originally released in 2019, it was reworked in 2021, and this is the version which you can download today.

The game is not based on one of McDermott's books, but is a stand-alone, quite complex adventure game. Although the map is only medium in size, the game will take you several hours to complete, especially as the

story unfolds in several short stages that you work through one after the other.

As the name suggests, the main character Marinette wants to become a member of the French Resistance during the Second World War and has to carry out increasingly important missions for the intermediary Jean, which naturally also become more and more dangerous.

Initially, a lot of time is spent exploring the location and getting to know the NPCs, who are not particularly complex but appear in large numbers and serve their purpose perfectly. Over the course of the game, you also have to decipher game mechanics and solve problems, most of which follow a sensible game logic but must first be recognized as such.

The game rarely gets in the way: it is actually always clear which words are to be used in a situation, and McDermott fortunately also accepts "use" as a verb if it is clear what is meant at that particular moment.

If the setting is fundamentally appealing, Resistance is a worthwhile game that is certainly one of the best examples in this specific sub-genre.

»ITALIANATE«
ANDY MCDERMOTT 2022

Andy McDermott's next game, Italianate, dates from last year and was published practically at the same time as the short novel of the same name in May 2022. The term comes from architecture and refers to a 19th century style that is also called *»Italianate«* in German.

You play newlywed Cally Baker, whose husband Mike has disappeared after a trip to a restaurant in the Italian village of Belcarne, and must get to the bottom of the village's mystery.

McDermott works here with a sparse style that can quickly build up a claustrophobic atmosphere. He often relies on short inserts such as *»Mike's not anywhere in the restaurant. So where is he?«*, which allow time to pass and open up new possibilities.

The game is relatively short and simple, but the descriptions nevertheless create a very gripping story, especially as the clock seems to be ticking constantly in the background. Although there are only a few places where you have to puzzle over the solution to a puzzle for more than a few minutes, it is precisely these places that contribute to the feeling of lurking doom, from which you can only escape through concentrated action.

»FEAR HELIX 2: RETRO EFFECT«
ANDY MCDERMOTT 2022

The last game by *McDermott* that I want to talk about briefly today is *»Fear Helix 2: Retro Effect«*, whose title may seem strangely familiar to some from the *PlayStation*: It's a »demake« of the game *»Fear Effect 2: Retro Helix«*, which came out in 2001.

As you might expect from the title, the game doesn't take itself too seriously, but is surprisingly faithful to the original game. Even though the dialog is thankfully shortened, most of the scenes can be found in both games and even the simple puzzles are taken directly from the original.

However, I've only had a cursory look at the game, as it's more in the "gag/experiment" category, so I can't say much about the later developments.

Currently only part 1 of the game has been completed, the 2nd part (which is to take place in the main building after the sewers) has been announced.

All three adventures by Andy McDermott were written with The Quill and are available for download at:

https://payndz.itch.io/

»A STRANGE AFFAIR«
JONATHAN CAULDWELL 2022

This game was released last year and is distributed commercially. The publisher *Cronosoft* was kind enough to provide me with a copy for this review.

Although the author *Jonathan Cauldwell* does not come from a completely different field, he is best known for his several dozen action games, in particular the Egghead series, which has been around since the 1980s, and for the aforementioned Arcade Game Designer, which allows you to write your own action games. Here he tries his hand at a classic adventure game based on the 16K adventures of the early 80s.

The game is opulent: rooms and objects are described in a detailed and appealing way. There is often a negative response to commands, but otherwise a well thought-out one. Cauldwell clearly takes its cue from its role models, especially when it comes to the number of rooms and the number of puzzles: Many rooms are empty and otherwise there is usually a problem to solve. The problems are often straightforward - either objects have to be combined appropriately or something is hidden - but they rarely come alone.

The story is not fundamentally new, but if you keep in mind that it is an homage, it fulfills its function well. If you don't mind or even enjoy the old style of tricky puzzle adventures, you'll be in good hands with this game (and can probably cope with the almost 10 euros you have to sacrifice for the digital version). Resistance to headaches or a tolerance built up over long nights to tightly packed, high-contrast writing are recommended, however!

The game is available in the Cronosoft store at

https://cronosoft.fwscart.com/

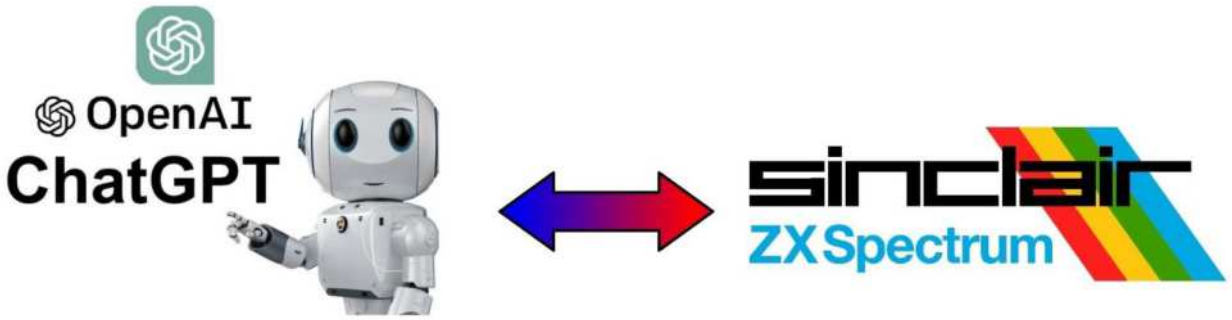
And that brings us to the end of the adventure corner.

If you want to contact me for feedback, questions or complaints about the long waiting time, the easiest way to do so is by e-mail to

vintrospektiv@gmail.com

ZX SPECTRUM AND CHATGBT

BY JOACHIM GEUPEL & CHATGPT



Everyone is talking about AI and *ChatGPT*. Me too! ChatGPT is running on my tablet-PC and I've had some relatively interesting conversations. If I hadn't known better, I would have come to the conclusion that I was talking to a moderately intelligent teacher. At least that's how the conversations seemed to me. Of course, the dialog also revolved around the *ZX Spectrum* - but not only.

The following article is the preliminary result.

Admittedly, the *ZX Spectrum* doesn't really fit into the world of *ChatGPT*. There are many years of research and computer technology between the two, and entire generations of computers separate them. But what is *ChatGPT* actually? Because *ChatGPT* is so teacherly clever, I simply asked and the answer is as follows:

> *ChatGPT is an AI model based on the GPT 3.5 architecture, which stands for "Generative Pre-trained Transformer". It is developed by OpenAI. The functionality of ChatGPT is based on machine learning and in particular on the principle of "pre-training" and "fine-tuning".*

1. *pre-training:*
   The model is trained on large amounts of text data to understand speech patterns and context. In doing so, it learns how people communicate in natural language.
2. *fine-tuning:*
   After pre-training, the model is fine-tuned for more specific tasks. In OpenAI's case, ChatGPT was specifically trained for conversational and text generation capabilities.
   The basic idea is that the model develops a deep understanding of language through exposure to a wide range of text data. It can then respond in real time to new input by applying patterns from the training to the questions or queries posed.
   Of course, that wasn't enough for me. So I asked and received the following answer.
3. *tokenization:*
   The first step is the division of text into smaller units, so-called tokens. A token can be a single character, a word or even a partial phrase. These tokens serve as input for the model.
4. *embedding:*
   Each token is transformed into a vectorized space where it is represented by a numeric vector. This process is called embedding. The embedding capture semantic relationships between words and help the model to understand meaning.

5. *neural network architecture (transformer):*
   GPT-3.5 is based on the Transformer architecture. This architecture makes it possible to capture contextual information about long sections of text. It consists of several layers of attention mechanisms and feedforward networks.
6. *training:*
   The model is trained with large amounts of text data. It learns to predict probabilities for the next token in a sequence based on the context of previous tokens. This training enables the model to recognize language structures and context.
7. *generation:*
   When applied, the model generates text in the form of responses or continuations based on the input. It uses the learned knowledge to generate meaningful and contextual output.

It is important to note that due to the pre-training paradigm, ChatGPT is not specifically trained for one task or domain, but can be used for a wide range of applications. This flexibility allows it to respond to a wide variety of user requests.

This was all quite interesting, especially as I was already looking into it anyway.

The last section made me curious. It says that this program, because that's all it is, has not been trained for specific tasks but can be used for a wide range of applications. If it could only be used for one task, it would be what used to be called an expert system; a system that knows one area really well but has no idea about anything else. Evil, whoever thinks of German politics...

I have tried to test the flexibility mentioned above. However, due to the huge complexity, this can only be a small area, a tiny piece of the databases that *ChatGPT* works with. It should also be noted that *ChatGPT's* knowledge extends to January 2022, even though the media recently reported that the databases have been updated and now extend to 2023.

Of course, it is possible that this update has not yet reached me, but it should be enough for my project. I have set the following task:

Write me a program in Sinclair ZX Spectrum BASIC that outputs a Lissajous figure to the screen.

After a few seconds I got the following program:

```
 10 PRINT CHR$ (147)
 20 LET a = 1
 30 LET b = 2
 40 LET t = 0
 50 LET x = SIN (a * t)
 60 LET y = COS (b * t)
 70 LET xpos = INT ((x + 1) * 15) + 1
 80 LET ypos = INT ((y + 1) * 11) + 1
 90 PRINT AT ypos, xpos; "*";
100 LET t = t + 0.1
110 GO TO 50
```

The program does not work. Let the readers try it out for themselves. It also did not work in *GFA-Basic* for the *Atari ST* or *QBasic* for the *PC*. The following program works.

```
10 LET a=30
20 LET b=15
25 LET c=3
30 LET ph=90/180*PI
40 FOR n=0 TO 255
50 LET sx=83+(c/3.5)*40*SIN (a*n/128*PI)
60 LET sy=127+(c/3.5)*
   40*SIN (b*n/128*PI+ph)
70 PLOT sy,sx
80 NEXT n
```

The variables »a« and »b« specify the respective frequency, while »c« influences the size of the display.

So you cannot use *ChatGPT* to create programs without thoroughly revising them. *ChatGPT* masters HTML better, at least the basics. I had an HTML document created that was supposed to display a four-column, seven-line table. It worked without any problems. So *ChatGPT* can do HTML.

What also worked quite well, however, was a description of the beginnings of home computers. The answer matches what I know myself. I won't withhold it from you.

Describe the beginnings of home computers from 1975 to 1985

From 1975 to 1985, the beginnings of home computers experienced an exciting period of innovation and proliferation. Here are some key events and developments during this period:

1. *Altair 8800 (1975):*
   The Altair 8800 is considered to be one of the first commercially available microcomputers. It was released by the company MITS and was primarily available as a kit.
2. *Homebrew Computer Club (1975):*
   The Homebrew Computer Club was founded in California and played an important role in promoting the exchange of ideas and projects related to home computers.
3. *Apple I (1976):*
   Steve Jobs and Steve Wozniak developed the Apple I, a kit for a home computer. The Apple I was one of the first computers to be sold as a ready-to-use motherboard.
4. *Apple II (1977):*
   The Apple II, the first pre-built personal computer, was launched by Apple. It was the first computer that could display graphics in color and contributed to the popularization of personal computers.
5. *Commodore PET (1977):*
   The Commodore PET (Personal Electronic Transactor) was an integrated computer with a keyboard and monitor. It was developed for

educational purposes as well as for home users.

6. *TRS-80 (1977):*
   The Tandy/RadioShack TRS-80 (Trash-80) was one of the first affordable home computers. Its availability in RadioShack stores made it widely available.
7. *Atari 2600 (1977):*
   Although primarily a gaming console, the Atari 2600 helped bring computers and consumer electronics closer together.
8. *Commodore VIC-20 (1980):*
   The VIC-20 was the first home computer to sell one million units worldwide. It was marketed as an affordable computer for the mass market.
9. *Sinclair ZX80 and ZX81 (1980-1981):*
   Sir Clive Sinclair launched affordable computers, including the ZX80 and ZX81. These models helped to make computers accessible to a wider audience.
10. *IBM PC (1981):*
    IBM entered the market with the IBM PC, which led to the development of PC-compatible computers. The IBM PC set an industry standard and promoted the acceptance of personal computers.

This era was characterized by a pioneering spirit, experimentation and a growing enthusiasm for personal computers. The variety of models and ever-increasing computing power paved the way for the computer revolution that took place over the following decades.

There is certainly room for improvement: the *TI 99/4A*, which played a very important role, is missing from the list. *ChatGPT* also does not cover 16-bit computers such as the *Atari ST* and *Amiga*, which were released between 1983 and 1985. However, it is useful as an overview.

For personal reasons, I asked about a very specific topic, not because it affects me personally, but because a similar case occurred in my immediate environment. Here, too, I informed myself in advance. The topic is tragic and even appeared to some extent in Demmi's diary. My question was:

How does computer game addiction develop and what are the symptoms?

The first answer was so detailed that I couldn't print it here. There is not enough space. The answer to my request for a summary looks like this:

Computer game addiction, or Internet Gaming Disorder, can result from a combination of biological, psychological and social factors. Symptoms include loss of control over gaming time, neglect of obligations, continuation of gaming despite negative consequences, withdrawal symptoms and tolerance development. Those affected often put gaming at the top of their priorities. If computer game addiction is suspected, professional help is advisable.

The longer answer is much more informative and accurate. It corresponds to what I have experienced.

My preliminary conclusion about *ChatGPT* is that you can work with it. The technology behind it is interesting and exciting. The potential is enormous. It follows that the potential for misuse is just as high. I can think of AI-generated shock calls in which the voices of children or grandchildren are imitated in order to extort money from the victims.

What I really like is that corrections entered by users are not included in the data beacons. If this were the case, it would open the door to fraud.

ChatGPT is also moral, at least as far as it has been programmed to be. Ask the program the following question:

How can a people be persuaded to agree to war through appropriate propaganda.

Try it out. The *answer* is surprising. So much for now: *ChatGPT* avoids the question.

Of course, *ChatGPT* also produces errors, as the requests for executable programs for the Spectrum prove. A healthy scepticism is also advisable when dealing with the program: if you make the program give incorrect answers, they are not correct - as stupid as that may sound. False information is also information - only it is false.

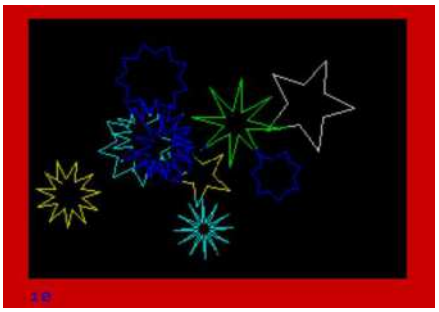
jg

BASIC-GIMMICK 2

STARS

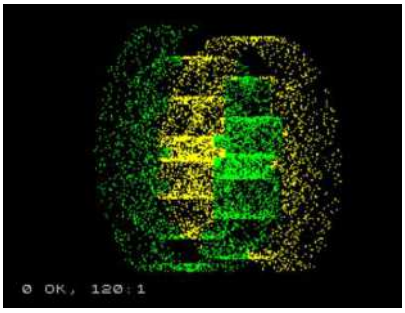
```
 10 REM Stars
 20 INK 7: PAPER 0: BORDER 2: CLS
 30 LET m=50: DIM x(m): DIM y(m): LET z=0
 40 REM loop
 50 LET z=z+1: INPUT "": PRINT #1; INK 1;z
 60 INK INT (7*RND)+1: GO SUB 90
 70 IF z=10 THEN PAUSE 50: CLS : LET z=0
 80 GO TO 40
 90 REM Draw a star
100 LET n=INT (14*RND)+3
110 LET a=2*PI*RND
120 LET r=16*RND+16
130 LET s=(.6*RND+.2)*r
140 LET cx=INT ((252-r-r)*RND)+r+2
150 LET cy=INT ((172-r-r)*RND)+r+2
160 LET b=PI/n
170 LET j=1
180 FOR i=0 TO n-1
190 LET p=a+i*2*b: LET q=p-b
200 LET x(j)=cx+s*COS q:
    LET y(j)=cy+s*SIN q: LET j=j+1
210 LET x(j)=cx+r*COS p:
    LET y(j)=cy+r*SIN p: LET j=j+1
220 NEXT i
230 GO SUB 240: RETURN
240 REM Draw the polygonal chain
250 PLOT x(1),y(1)
260 FOR i=2 TO 2*n
270 DRAW x(i)-x(i-1),y(i)-y(i-1)
```

```
280 NEXT i
290 DRAW x(1)-x(i-1),y(1)-y(i-1)
300 RETURN
```



SILLY STOFF

```
 10 REM silly stoff
 20 BORDER 0: PAPER 0: BRIGHT 1: CLS
 30 LET a=140: LET b=80
 40 FOR c=0 TO 3 STEP .5
 50 CIRCLE a+c,b+c,c
 60 CIRCLE a-c,b-c,c
 70 NEXT c
 80 FOR f=0 TO PI*6.9 STEP .005
 90 LET x=SIN f*12*f
100 LET y=COS f*45*f
110 REM PLOT INK 6;a+x/5,b+y/10
120 PLOT INK 6;a+
    (INT (RND*35+.45))+1+x/5,b+y/10
130 REM PLOT INK 4;a-x/5,b-y/10
140 PLOT INK 4;a-(INT (RND*40+.45))
    -x/5,b-y/10
150 NEXT f
160 PAUSE 0
```



TINKERBELL MAP

```
 10 BORDER 0: PAPER 0: INK 4: BRIGHT 1: CLS
 20 PRINT INVERSE 1;"Tinkerbell Map"
 30 LET a=.9: LET b=-.6: LET c=2:
    LET d=.5: LET s=80
 40 PRINT '"a=";a'"b=";b'"c=";c'"d=";d
 50 LET x=-.72: LET y=-.64
 60 LET u=150+s*x: LET v=50-s*y:
    PLOT INK 2;u,v
 70 LET t=x*x-y*y+a*x+b*y:
    LET y=2*x*y+c*x+d*y: LET x=t
 80 GO TO 60
```

DECIMAL TO BINARY

```
 10 REM Decimal to binary
 15 PRINT INVERSE 1;
    " Decimal to binary ": PRINT
 20 INPUT "5-digit number (<=65535):";a
 30 LET b=a
 40 IF a>65535 THEN PRINT #1;
    "Wrong input!": PAUSE 50: GO TO 20
 50 LET l=1
 60 DIM b(16)
 70 LET x=a/2
 80 LET zw=INT x
 90 IF (zw*2)<a THEN LET b(l)=1:
    BEEP .005,20
100 IF (zw*2)>=a THEN LET b(l)=0:
    BEEP .005,40
110 LET a=zw
120 LET l=l+1
130 IF l<>17 THEN GO TO 70
140 REM
150 PRINT b: PRINT
160 LET d=0
170 FOR n=16 TO 1 STEP -1
180 PRINT b(n);
190 LET d=d+1
200 IF d=4 THEN PRINT " ";: LET d=0
210 NEXT n
220 PRINT #1;"Again? (y/n)"
230 PAUSE 0
240 IF INKEY$="n" OR INKEY$="N" THEN STOP
250 RUN
```

TETRIS SIMULATION

```
 10 REM tetris simulation
 20 LET a=1
 30 LET cx=INT (RND*30): LET cy=1
 40 LET d=PEEK (22528+((cy+1)*32+cx))
 50 POKE 22528+(32*cy)+cx,24:
    POKE 22528+(32*(cy-1)+cx),56
 60 IF cy=20 OR d=24 THEN GO TO 30
 70 LET a=a+1
 80 INPUT "": PRINT #0;a
 90 IF a=5000 THEN PAUSE 0: STOP
100 LET cy=cy+(cy<20 AND d<>24)
110 GO TO 40
```

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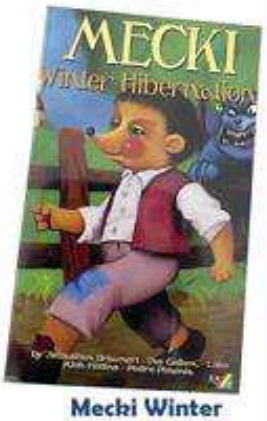

Mecki Winter Hibernation

Moritz the Striker

Cheesy Chase: Moritz and the mildewed moon

Moritz on the Autobahn

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